

AGRICULTURAL PUBLICATIONS.

The following publications have been issued by the Department, and are available for distribution at prices mentioned:—

"Fruit Tree and Grape Vine Pruning," by Geo. Quinn (Horticultural Instructor); price, 2s. 6d.; posted, 2s. 8d.

"Vinegrowers' Manual," by A. Sutherland; price, 6d.; posted, 7d.

Journal of the Department of Agriculture, 1s. per annum in advance; 3d. per single copy to residents of South Australia. Other places, 2s. 6d. per annum.

Any of the following bulletins and leaflets may be obtained by sending a penny stamp for postage:—

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THE AGRICULTURAL BUREAU.—Particulars of this Organisation, of which every farmer should be a member, can be had on application to the Department.

THE JOURNAL

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OF SOUTH AUSTRALIA.

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All communications to be addressed:

"The Editor, Journal of Agriculture, Victoria Square, Adelaide."

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R. P. BLUNDELL,

Minister of Agriculture.

POINTS FOR PRODUCERS.

Big Prices for Dairy Shorthorns.

The celebrated herd of dairy Shorthorns, the property of the late Lord Lucas, was recently sold. The average prices obtained, according to the *Agricultural Gazette*, were a world's record for a herd of dairy Shorthorns. Altogether 92 cows and bulls realized 16,436gs., an average of £187 11s. 8d., or some £63 above the previous record average established when the late Lord Rothschild's herd was sold. The 81 cows were sold first, and made 14,302gs., an average of £185 8s., while 11 bulls made 2,234gs., an average of £203 14s. The highest price of the sale was 810gs., paid for Primrose Dairymaid, a Royal Show cow, while a buyer secured Darlington Dairymaid 2nd at 650gs. Primrose Gift realized 750gs., and Charity 23rd 710gs. Darlington Dairymaid's calf sold for 150gs. Of the bulls, the Royal winner, Premier Gift, sold for 710gs., and Wild Darlington 2nd for 380gs.

Early Blight of Potatoes.

Portions of diseased potato leaves were recently received from the Murray Bridge Branch of the Agricultural Bureau. The Professor of Botany (Professor T. G. B. Osborn, B.Sc.) diagnosed the trouble as "Early Blight," and identified the attacking fungus as *Alternaria solani*. The regular disease spots becoming pale, and drying up distinguished it from Irish Blight. The trouble seldom becomes serious, though in many places it is the custom to spray with Bordeaux mixture at its first appearance. The same fungus attacks tomatoes, for which reason they should not follow diseased potatoes on the same ground for a couple of years, and *vice versa*.

The Cattle Tick in Australia.

Under the above title the Commonwealth Advisory Council of Science and Industry has just published a bulletin which will be of much interest to stockowners and to those connected with trades dependent on cattle for their raw materials. The bulletin consists of the report of a special committee appointed by the council last year to review the whole position of the tick pest, present and future, and make recommendations both as to future scientific research and as to immediate remedial or preventive measures, whether by legislation or otherwise. The committee consisted of authorities on veterinary science, stock inspectors, and representatives of the pastoral industry, and its recommendations are therefore authoritative, and worthy of careful consideration by the Governments and persons concerned. The first portion of the bulletin contains an account of the cattle tick itself, the diseases to which it gives rise in cattle, and a history of the spread of the tick in Australia. Maps of the present distribution of the tick in Queensland and New South Wales show

that the whole of the coastal areas of the former State and the north-east corner of the latter are now tick-infested. The bulletin next gives a review of the losses, direct and indirect, which have been caused in Australia by the tick invasion. The committee states that if the enormous toll the tick pest has exacted from the Commonwealth could be expressed in figures, the total amount involved would stagger the community. Each year, so long as it is allowed to continue, the pest will enforce a heavy penalty, to be met not only by the stockowners, but by all interested in business, directly and indirectly, dependent upon the cattle industry, as well as by members of the general public in the increased cost of necessary commodities such as meat, milk, butter, bacon, &c. After describing the methods of eradication adopted in America and Australia, and giving a summary of the campaign for tick eradication in the United States, which has been successful in freeing over 260,000 square miles of country from the tick, and thus affords promise for similar action in this country, the committee makes specific recommendations as to the action that should be taken in Australia. These recommendations fall under two heads—(1) That a campaign for eradication should be undertaken under Federal control; (2) That further researches on the tick, its life-history and the nature of tick fever should be carried out in Australia. The executive committee of the Advisory Council has indorsed these recommendations, and has already announced that researches on the life-history of the tick will be undertaken immediately in Southern Queensland.

One Shilling Each for Apples.

Prices ranging up to 9d. and 1s. each for apples regardless of variety were paid for the first shipment of Australian apples to reach London this year. These arrived at a time when the market was absolutely bare, and it is the first time on record since the introduction of Australian apples to this market, so far as the Trades Commissioner is aware, that Covent Garden has been without an apple for sale. The condition of the fruit of several packers who had adopted a slightly larger and thicker wrapper, and were using corrugated paper at the ends, top, and bottom, is reported to have been extremely satisfactory. The weight has improved, and this type of package is preferred by lumpers, who look with suspicion on the weight of any goods that carry an excess of wood wool.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Extraordinary pressure on space has rendered it necessary to very considerably curtail the inquiry department. Replies to those questions of more general interest only have been published; however, every query received has been replied to through the post.—Ed.]

VETERINARY INQUIRIES.

"S. J. H.," Whyte-Yarcowie, has a horse which loses condition, sweats heavily, and scours badly.

Reply—It would seem as if the horse had caught a chill, that has brought on congestion of the liver. It would be well to feed on hot bran mash only for a day or two, and give half a pint of raw linseed oil once, then a teaspoonful of sal ammoniac ground in a teaspoonful of treacle or honey on the teeth twice a day for a few days.

"A. B.," Beetaloo Valley, seeks a remedy for worms infesting cats.

Reply—The infestation of cats with worms from rats and mice is very common. Castor oil, as stated, is a good remedy, but pills of yellow soap, one a day for a few days, will be found effective also. If drug treatment is desired get children's worm tablets, and give half one to a cat. If expensive treatment is wished give two grains santonine and two grains of jalap.

"W. W. W.," Echunga, has a doe ferret affected with footrot.

Reply—This complaint in ferrets is really gouty eczema, and is practically incurable, although it may be checked. Dust lime and sulphur in hutch, give a small pinch of sulphur in milk once a day for a week or two, and dress feet daily with noric vaseline.

"A. B.," Green Patch, has a cow, hard to milk in front teats.

Reply—The trouble is a muscular one, the sphincter muscle, which governs the flow of milk, being too highly strung. Take a bone knitting needle, not too large, and well grease it and pass up the teat half an inch before and after each milking. This will probably dilate the muscle and overcome the difficulty.

"H. M.," S. Booborowie, has a mare with bridle teeth, and asks whether she could be used for breeding.

Reply—A mare with well developed tusks is a very uncertain breeder; they are a sign of want of femininity. As a brood mare such a one cannot be recommended. If she runs with a vigorous colt she may conceive.

"J. B. C.," Munderoor, has a light gelding, six years, off color; costive, though on paddock feed; broken out in scales above hoofs.

Reply—The symptoms point to eczema complicated by acute indigestion. Feed on bran mash only for two days, then give a five-dram physic ball, and when this has ceased to work, give a dessertspoonful of sulphur in a little bran daily for a fortnight. Dress the scaly parts once daily with a lotion consisting of sugar of lead 4oz., sulphate of zinc 4oz., methylated spirit 4pt., water 4pt.

"J. S.," Clement's Gap, reports that mare, nine years, had trouble foaling third foal, which, however, was born alive. Mare stiff in hindquarters, throws leg out sideways; worse at trot.

Reply—The trouble is probably slight displacement of the pubic joint, and as the mare is otherwise all right, it will be better to put her to horse this season, as next foaling will probably straighten out matters again.

"T. G.," Parrake, has a cow which loses use of legs.

Reply—The trouble, as suspected, is in the joints. The disease is connected with lack of lime salts in feed, and it would be well to burn some lime and give her a tablespoon of the slaked lime in her feeds daily while being milked. If her bowels are bound up give her 2lbs. molasses in a gallon of milk occasionally. Rub her joints well two or three times a week with liniment.

"J. P.," Yeovil, Culburra, has lambs which go groggy behind, then shuffling along on knees; later refusing to stand, although apparently healthy.

Reply—It is difficult to say exactly what is the matter without a personal inspection, as the symptoms point either to footrot, which one would not expect at Culburra, or to inflammation of the interdigital gland, known round Yeovil as "loore." If Crossbreds, I should suspect the former; if Merinos or Leicesters, the latter. If footrot the decayed rotten condition of the hoof can be found on inspection, and treatment would be to pare away the diseased tissue and dress with burnt blue-stone and Stockholm tar till well. If the latter condition, swelling and scabby discharge from just above the hoof, with acute pain on pressure. Treatment, lance, dip a bit of cord in tar, and rub well between the claws, and tar well.

"J. P. S.," Tareowie, has a horse with little hollow sores on penis, with slight swelling of sheath.

Reply—It is very probable that the sores arise from microscopic worms in the blood known as *Habronema equi*; in the larval stage these are frequently found in the tissue of the penis, and produce such sores. It will be advisable to put the horse off service until they are healed, which may take weeks. Treatment for such would be as much grey mercurial powder as will lie on a shilling once a day on the tongue, and a daily washing of the organ with a warm solution of perchloride of mercury, 1 to 1000 strength. After a fortnight of the powder stop, and start two tablespoons of Fowler's solution or arsenic once a day for three weeks. If the sores are better when the arsenic is begun he may be put on service.

"E. J. B.," Koolunga, has a foal with long, thick navel, with wet discharge.

Reply—Dress daily or oftener with a powder made of half boracic acid and half burnt alum. If discharge does not stop in a day or two with this treatment paint twice daily with tincture iodine as well.

"F. H. P.," Mantung, has a foal a week old, troubled with scrotal hernia.

Reply—If the rupture is small, let him go for a year, it will probably decrease. If as big as a coconut, and he is worth the expense, have him operated by a trained veterinary surgeon. If as big as a football knock him on the head. Treatment is beyond amateur effort.

"G. L. T.," Brentwood, has had calves, six to eight weeks, die with dysentery.

Reply—Do not feed more than a gallon a day of separated milk, and add a handful of boiled linseed. The dysentery is probably due to worms in the lining of the stomach. Give three times a day as long as affected in a little fresh milk as a drench 20 drops pure carbolic acid, a teaspoonful of glycerine, and a teaspoonful of compound tincture of camphor.

"E. N.," Mypolonga, has a cow with bruised udder from fight.

Reply—Foment well, and apply a little glycerinated arnica after fomentation. The udder may form an abscess, in which case it would have to be lanced and treated with iodine liniment.

"L. R. C.," Pata, has ewes die with twin lambs.

Reply—The probable cause is *Sarcosporidiosis*, frequently referred to in these replies; twins being a greater burden on the system than singles, predispose a ewe to the trouble. Treatment—If possible, give a lick such as often prescribed here, and frequent change of pasture, as far away as practicable from scrub.

"C. D. S.," Butler, has a cow with hard, painful swelling in udder at root of teat.

Reply—The cow has developed an abscess, which may have to be lanced. Encourage the ripening by hot fomentation and camphor ointment, and after the abscess has discharged dress with iodine liniment twice daily. A few doses of cooling medicine, such as 1oz. of photographer's hypo., for a few days will help.

"J. G. H. P.," Callington, has a mare, stringhalt, came on suddenly after foaling.

Reply—If it were stringhalt there would be no cure, but it is more probably a dislocation of the pubic ligament, which frequently happens at foaling. It is very common round Callington. The treatment for this is to get the mare in foal again as soon as possible, and spell her till she foals, when the trouble will probably be put right.

PIMPERNEL.

Writing from Minlaton, a correspondent reports that sheep were put into paddock with good mixed feed, but containing a very lush growth of pimpernel or shepherd's weatherglass (*Anagallis arvensis*). In the course of a week many became suddenly ill and died, showing signs of general inflammation. When moved off the plant, deaths ceased. The plant is by most authorities considered doubtful as a poisonous one, but has that reputation in England. It contains a poisonous product known as saponin, similar in its action to the poison of quick growing sorghum, says the Veterinary Lecturer (Mr. F. E. Place, B.Sc., M.R.C.V.S.). This saponin, called smilacin, produces hydrocyanic acid in the stomach. Experimentally, it has been found that 12 to 15 grains of the poison per 1lb. body weight of the animal is a poisonous dose. The symptoms in cattle and sheep are distress, suffocation, and rapid death. Post-mortem there are signs of inflammation of the brain and digestive tract with congestion of the heart and lungs, and the blood seems dark and tarry. Like all plants producing such poisons, the amount is small as a general rule, and diluted with other feed does no harm, but a very minute amount over the safety limit is fatal. From the rapid growth of the specimen, it may be assumed that this was the case in this instance. As with other similar plants it would be harmless when wilted; hence the diversity of opinion as to its toxic nature. Treatment, when in time, would consist of bleeding to relieve the heart and lungs, and dosing with milk and molasses to prevent further generation of hydrocyanic acid.

KANGAROO ISLAND.

THE PROBLEMS OF ITS SETTLEMENT.

On Kangaroo Island, says the Director of Agriculture (Professor Arthur J. Perkins) in the report of the Department of Agriculture for the year ended June 30th, 1916, we have at our doors a million odd acres of land with an abundant rainfall and an excellent general climate. Of this area not quite one-half is in occupation, whilst less than one-quarter is in private hands. The general agricultural position of the island may be indicated by the data summarized below.

Chief Agricultural Data for Kangaroo Island, 1915-16.

	Acres.		Acres.
Total area cultivated	10,930	Under root crops	8
Under barley	4,620	Under vines	2
Under hay crops	3,127	Under market garden	2
Under oats	1,326		Number.
Under bare fallow	763	Horses	1,209
Under wheat	668	Cattle	457
Under sown grasses	100	Sheep	28,682
Under orchard	70	Pigs	314
Under rye	21		

It is clear that very little agricultural use is being made of these million acres of land, notwithstanding the special advantages of a mild, moist climate. A reliable rainfall means so much to us over the balance of our territory that we are forced to the conclusion that there must be good reasons for this apparent neglect, and chief among them, perhaps, is the fact that much of the island land is from the agricultural point of view inferior in type. A poor type of soil, however, has not deterred us within recent times from throwing open to settlement large areas of land on the mainland; and it is elsewhere we must look for the main causes of apparent failure on Kangaroo Island. Personally, I believe that attempts at settlement have hitherto failed chiefly because of the following factors:—

(1) Complete dissimilarity between the agricultural conditions of the island and those of the mainland, and the inability of new settlers without capital to cope with these conditions.

(2) Very indifferent means of communication with mainland centres, which has practically led to the commercial isolation of the island.

In the past we have seen new settlers hopefully taking up blocks on the island and endeavoring to give effect to ordinary mainland practice in anticipation of similar results. The scrub has been rolled, burnt, and wheat sown. Unfortunately, more or less complete failure would appear to have been the usual result of these efforts, and lack of success and lack of capital have combined to compel settlers to throw up their blocks in disgust. It seems clear that if the island has to depend upon the spasmodic efforts of casual mainland settlers it will not be settled in our time.

We cannot avoid recognizing that from the agricultural point of view the island presents many difficulties, and these, in my opinion,

are not likely to be overcome, except under the stimulus of State aid. In the first place the island, in present circumstances, offers practically no room for the man without capital who cannot wait for his returns; nor indeed does successful settlement appear probable except in the form of strong co-operative colonies able to make themselves felt both industrially and politically. Much of the land is sour and cold, and subsequent to clearing and reclaiming will probably require several years' tillage before acquiring any degree of fertility or agricultural condition; much of it, too, overlies coarse ironstone gravel, which has generally proved more or less hostile to cereal crops. Indeed, on present appearances it would seem that the island will have to depend more on forage crops than on cereals; and it is on the former that I think the agricultural economy of the island will ultimately depend. In this connection I am of the opinion that on a basis of root crops and artificial grass pasture, a thriving dairy industry might well be established on the island. Cows imply the presence of pigs, and with the two will probably be associated in time fruit-growing, preferably apple-growing, in view of the exportable character of the fruit.

In present circumstances, however, it would be idle to anticipate success in either dairying or fruit-growing from the efforts of scattered individual settlers; their puny endeavor would be foredoomed to failure, and it is only the strong, self-reliant co-operative colony that is in my opinion capable of compelling success from conditions which are after all only artificially adverse.

The success of these settlements, however, will depend very largely on their ability to dispose of produce to advantage, and hence on the establishment of local butter and bacon factories; and, illogical though it may sound, neither milk nor pork will be available until the factories are erected and in full working order. Hence it seems inevitable that these factories, at the outset at all events, should be State owned. At a later stage no doubt they might be allowed to pass under the control of settlers as co-operative concerns.

Successful settlement will imply, too, improved means of communication both within the island itself and between the island and the mainland. Any remissness in attending to this question of communication will foredoom to failure any scheme of settlement that may be adopted.

Briefly, then, the island cannot be settled by a mere waving of a wand; indeed, at the outset it is certain to involve the State in unusual expenditure which will have to be incurred more or less on faith. In this connection, perhaps, it will be wiser to await such results as can be obtained on a Government farm opened out on the ironstone country. If on this farm it can be definitely shown that, given adequate skill and attention, both dairy cows and fruit trees can be handled profitably on ironstone country, it will then be open to the Government to decide whether the risk of establishing co-operative fruit and dairy colonies on the island would be worth incurring.

Finally, it should be added, that it is quite possible that as the land sweetens and mellows under the combined influence of tillage and grazing, far more land on the island than we at present realize may carry successfully periodical crops of cereals.

THE AGRICULTURAL BUREAU.

THE TWENTY-EIGHTH ANNUAL CONGRESS.

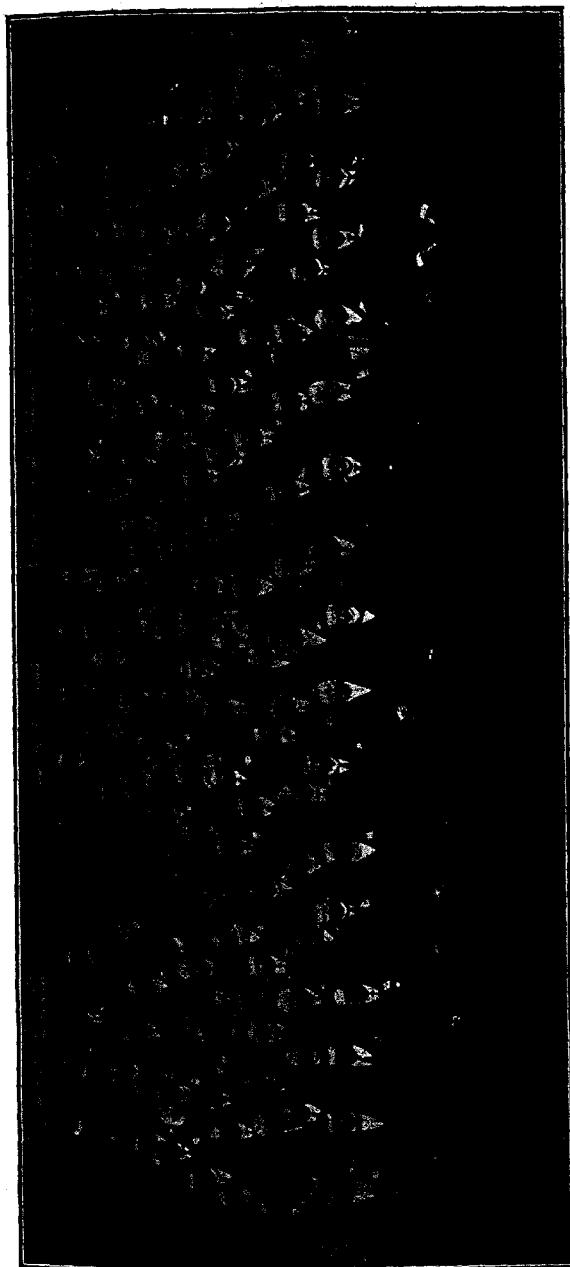
OPENED BY THE GOVERNOR.

The twenty-eighth annual Congress of the Agricultural Bureau was held in Adelaide on Monday and Tuesday, September 10th and 11th, 1917.

DELEGATES.

During the sittings the following delegates attended:—Messrs. A. Crisp (Amyton), T. N. Mills (Amyton), W. Patching (Angaston), E. S. Matthews (Angaston), P. O. Eckert (Arden Vale), J. H. Willis (Arden Vale), W. R. Stephenson (Artherton), T. H. Howlett (Artherton), H. M. Tuck (Balaklava), K. Neville (Balaklava), J. Burton (Beetaloo Valley), J. G. R. Flavel (Beetaloo Valley), W. R. Bradtke (Belalie North), W. Cummings (Belalie North), W. R. Lewis (Berri), R. W. Rolland (Blackheath), E. H. Pym (Blackheath), J. Turner (Blackwood), T. C. A. Magarey (Blackwood), A. L. McEwin (Blyth), F. Wiltshire (Blyth), V. V. Crase (Bookpurnong East), G. O. Adams (Bookpurnong East), R. W. Stanton (Booleroo Centre), W. G. Whibley (Booleroo Centre), H. H. Tonkin (Borrika), O. F. Bauerochse (Borrika), J. J. Honner (Brentwood), H. L. Martin (Brentwood), W. Pearson (Brinkley), S. White (Brinkley), S. H. Ellis (Bundaleer Springs), F. G. Giles (Bundaleer Springs), H. D. Edwards (Burra), G. R. Finch (Burra), L. E. Simon (Bute), A. E. Bryant (Bute), D. B. Butler (Butler), S. M. Bawden (Butler), F. Kaerger (Carrieton), T. H. Fuller (Carrieton), H. A. Freeman (Carrow), C. Ricks (Cherry Gardens), H. A. Maynard (Clanfield), A. Orwell (Clanfield), P. H. Knappstein (Clare), R. E. Hunter (Clare), J. Potter (Clarendon), T. B. Brooks (Clarendon), — Sgall (Claypan Bore), E. T. Colwill (Claypan Bore), P. P. Kenny (Colton), M. D. Kenny (Colton), O. Blucher (Coomandook), R. Upton (Coomandook), L. Toholke (Coomooroo), W. Robertson (Coomooroo), T. J. Pitman (Coonalpyn), G. E. Venning (Coonalpyn), A. H. Reske (Coonawarra), L. C. Stapleton (Coonawarra), J. Patterson (Cradock), H. H. Lindo (Cradock), W. W. Robinson (Crystal Brook), M. P. Pavay (Crystal Brook), S. Trigg (Cummins), J. Durdin (Cummins), H. T. Noske (Cygnet River), C. T. Miller (Cygnet River), F. Lock (Dowlingville), A. Palm (Edillilie), J. M. McMurtrie (Edillilie), A. O. Chilman (Elbow Hill), H. J. Wheeler (Elbow Hill), M. P. Daly (Eurelia), J. Cummings (Eurelia), W. Searle (Forster), W. Tyler (Forster), A. J. Brown (Francis), E. L. Atkinson (Francis), W. Rice (Gawler River), W. J. Dawkins (Gawler River), J. McAuley (Georgetown), S. Eyre (Georgetown), W. A. Stacey (Geranium), W. Pannell (Geranium), G. M. Black (Gladstone), F. Mutter (Gladstone), J. T. Halliday (Glencoe), M. D. Cameron (Glencoe), W. Folland (Goode),

P. Hunt (Goode), C. Parker (Green Patch), E. E. Chapman (Green Patch), J. Monfries (Gumeracha), J. Braithwaite (Halidon), L. von Doussa (Halidon), J. Stanton (Hartley), J. M. Hudd (Hartley), J. B. Scott (Hilltown), R. E. Dinham (Hilltown), P. Henschke (Hookina), S. Stone (Hookina), H. J. Dennis (Inman Valley), H. J. Jagger (Inman Valley), R. Correll (Kadina), J. N. Pedler (Kadina), J. M. Mitchell (Kalangadoo), D. W. Tucker (Kalangadoo), H. Shepherd (Kamantoo), W. Downing (Kamantoo), A. N. Thompson (Keith), A. W. Shannon (Keith), L. H. Angus (Ki Ki), M. J. Young (Ki Ki), F. J. Foord (Kingston-on-Murray), S. Saunders (Kingston-on-Murray), C. L. Atkin (Kongorong), A. C. Gust (Kongorong), E. O. Dahl (Koonibba), A. R. Schultz (Koonibba), T. R. Gardner (Koppio), F. C. Lacey (Kybybolite), P. Anderson (Kybybolite), E. T. Wray (Lameroo), G. S. Hayman (Lameroo), R. Lines (Laura), R. J. Rose (Laura), A. D. McDonald (Leighton), J. Lynch (Leighton), J. E. Minge (Lone Pine), H. Schwartz (Lone Pine), P. W. Dow (Lucindale), H. Langberg (Lucindale), F. Moore (Lyndoch), J. S. Hammett (Lyndoch), A. D. Inglis (MacGillivray), B. Cornish (Maitland), A. Jarrett (Maitland), T. Weatherill (Mallala), J. C. Catt (Mallala), H. W. Lehmann (Mantung), C. Hammond (Mantung), A. D. Matheson (Milang), J. P. Bagley (Milang), H. Hart (Millicent), W. Downs (Millicent), E. Story (Miltalie), H. R. Jacobs (Miltalie), O. Payne (Mindarie), A. Francis (Mindarie), J. Martin (Minlaton), J. McKenzie (Minlaton), G. V. Lindquist (Minnipa), L. J. Cook (Minnipa), F. W. Jacka (Mintaro), A. L. Sandow (Mintaro), G. Patterson (Monarto South), A. Schenseher (Monarto South), W. B. Stacey (Moonta), J. Lawry (Moonta), H. G. Kupke (Morchard), E. J. Kitto (Morchard), I. Pope (Morgan), W. G. F. Plummer (Morgan), A. Pocock (Morphett Vale), A. Furniss (Morphett Vale), H. N. Bell (Mount Barker), E. F. Stevens (Mount Barker), G. T. Major (Mount Gambier), D. A. Collins (Mount Gambier), W. Mahoney (Mount Hope), G. A. Vigar (Mount Hope), H. H. Davie (Mount Remarkable), W. Bishop (Mount Remarkable), G. Saxon (Mundalla), J. E. Staude (Mundalla), T. Reardon (Mundoorra), I. B. Clothier (Mundoorra), J. Jenkin (Murray Bridge), H. B. Kutchel (Murray Bridge), H. Bartle (Myponga), J. J. Muller (Myponga), G. Williams (McNamara Bore), F. Wilford (McNamara Bore), J. H. Nicholls (Nantawarra), T. Dixon (Nantawarra), S. H. Schinkel (Naracoorte), W. Loller (Naracoorte), J. Darley (Narridy), P. Haren (Narridy), J. B. Steer (Narrung), S. Bottrill (Narrung), C. M. Wilkin (Netherton), J. Bald (Netherton), J. W. Smart (North Booborowie), W. C. Warner (North Booborowie), W. J. Dall (Northfield), A. Sanderoock (Northfield), L. R. Cottrell (Orroroo), A. L. Brice (Orroroo), J. A. Darby (Parilla), G. E. Gregory (Parilla), E. H. Leak (Parilla Well), A. Inkster (Parilla Well), A. J. Beditz (Parrakie), O. Hienzel (Parrakie), J. C. Price (Paskeville), T. R. Brinkworth (Paskeville), D. McKay (Penola), W. Miller (Penola), A. A. Dolling (Pine Forest), R. D. Goodridge (Pine Forest), P. J. Edwards (Pinnaroo), P. H. Jones (Pinnaroo), H. H. Orchard (Pompoota), W. H. Glenny (Pompoota), R. D. Goodridge (Port Broughton), W. E. Hargreaves (Port Elliot), H. B. Welch (Port Elliot), A. P. Blesing (Port Germein), H. G. Davey (Port



Twenty-eighth Annual Congress of the Agricultural Bureau—Some of the Delegates and Officers of the Department of Agriculture who were present.

Germein), T. G. Kirchner (Port Pirie), A. M. Laurie (Port Pirie), R. Thompson (Quorn), A. Jago (Quorn), F. Lewis (Rameo), F. G. Rogers (Rameo), A. N. Harris (Redhill), J. J. Hayes (Redhill), M. B. Geneste (Renmark), O. Weste (Renmark), T. Longbottom (Riverton), E. A. Gray (Riverton), F. Masters (Roberts and Verran),* W. C. McCullum (Roberts and Verran), S. C. Davis[†] (Rosenthal), A. F. Thomas (Rosenthal), C. Lee (Rosy Pine), A. Camens (Rosy Pine), A. Jamieson (Saddleworth), R. Hannaford (Saddleworth), W. J. McNicol (Salisbury), F. C. Fleet (Salisbury), H. G. Hornhardt (Salt Creek), W. Lee (Salt Creek), A. Grant (Sandalwood), W. Wiloughby (Sandalwood), J. P. Trezona (Sherlock), A. G. Taylor (Sherlock), R. Whitelaw (Stockport), J. Murray (Stockport), W. A. Cuming (Strathalbyn), T. D. Finney (Strathalbyn), E. J. Altschwager (Tantanoola), D. Beaton (Tantanoola), C. A. Kotz (Tarcowie), W. S. Ninnes (Tarcowie), A. A. Fisher (Tatiara), T. Stanton (Tatiara), H. W. Kenner (Two Wells), C. Oke (Two Wells), H. W. Lehman (Waikerie), L. P. Pope (Waikerie), G. Growden (Warcowie), T. Ryan (Warcowie), J. G. Cowan (Warrow), H. C. Wilson (Warrow), C. Solly (Watervale), F. Burgess (Watervale), J. Crocker (Wepowie), J. E. Pearce (Wepowie), E. J. Pearce (Whyte-Yarcowie), G. D. Mudge (Whyte-Yarcowie), W. J. Tylor (Wilkawatt), W. R. Neville (Wilkawatt), E. C. Foulis (Willowie), F. Bull (Willowie), W. Slee (Wilmington), G. Goodenough (Wilmington), A. R. Woodlands (Wirrabara), E. J. Stevens (Wirrabara), H. H. Exton (Wirrega), C. R. Williams (Wirrega), G. J. Stone (Wollowa), A. Stirling (Wollowa), P. R. Hodge (Woodleigh), E. T. Smith (Woodleigh), C. W. Schultz (Wynarka), W. H. Richardson (Wynarka), A. O. Badman (Yaeka), R. Fuller (Yaeka), J. E. Quick (Yadnarie), A. R. Carn (Yadnarie), R. B. Jenkins (Yallunda), W. T. Roberts (Yallunda), H. B. Scholz (Yaninee), W. Mitchell (Yaninee), G. W. Proctor (Yeelanna), G. C. Smith (Yeelanna), A. Jamieson (Yongala Vale), C. Davies (Yongala Vale).

THE OPENING SESSION.

The Congress was opened at 8 p.m. on Monday, September 10th, by His Excellency the Governor (Sir Henry Galway), who was accompanied by Captain d'Erlanger (Aide-de-camp). Mr. Geo. Jeffrey (Chairman of the Advisory Board) presided, and there were also present on the platform the Minister of Agriculture (Hon. R. P. Blundell, M.P.), Mr. G. R. Laffér, M.P., Professor A. J. Perkins (Director of Agriculture), Professor T. G. B. Osborn, Messrs. W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S. (Principal Roseworthy Agricultural College), Henshaw Jackson (Wool Instructor of the School of Mines), D. F. Laurie (Poultry Expert), F. E. Place, B.V.Sc., M.R.C.V.S. (Veterinary Lecturer), Geo. Quinn (Horticultural Instructor), W. J. Spafford (Superintendent of Experimental Work), G. G. Nicholls (Manager of Wheat Board), W. L. Summers (Secretary Minister of Agriculture), Colonel Rowell, C.B., and Messrs. F. Coleman, J. Miller (members), and H. J. Finnis (Acting Secretary Advisory Board).

The Chairman welcomed His Excellency on behalf of the Advisory Board, and asked him to declare the Conference open.

THE GOVERNOR'S ADDRESS.

His Excellency said:—"A year of wonderful happenings and immortal sacrifices has marked the interval since we last met here. The war still drags on, and the blood and treasure spilt have already far exceeded anything that the world even dreamed of, and yet we are proud in the knowledge that the Allies were never more confident of victory than they are to-day. Britain's effort in the war has proved an eyeopener to her friends and foes alike. When that disciple of the devil, the Kaiser, and his infamous advisers forced war upon the world in August, 1914, they found Britain, as they well knew, quite unprepared. I should not say quite, as the ever watchful navy was very much prepared, and from the first day of the war bottled up the bulk of the German fleet in the Kiel Canal, from which hiding place it has once emerged in full force during a period of three years, and on that occasion it very soon scuttled back to its lair before Jellicoe's and Beatty's guns. However much Britain was unprepared on land on that fateful August 4th, she very soon woke up, and poured all her strength into the scales—blood, treasure, and industry. The Expeditionary Force, ridiculously small in numbers, but matchless in bravery, discipline and efficiency, and spirit—that dauntless Theban army led by Sir John French, which held the German hordes back at the outset until France was ready—has now grown into an army which is numbered in millions, and in which Australia is splendidly represented. The Navy was never more strong, confident, efficient, and unconquerable than it is to-day, and London was for three long years the banking house of the Allies. There's a record for you. The record of an Empire on which the sun never sets. An Empire whose word is its bond, and whose people are prepared to suffer any sacrifices in order to save the world from slavery, despotism, and military domination. The waking up of Britain in the early days of the war was due to Lord Kitchener more than to any other individual. He saw in millions and foresaw a war of years' duration. I have nothing new to say as regards the war, but my absolute confidence in final victory remains undisturbed, as it has been all along. I am aware that victory can only be obtained by the Empire and her Allies putting every ounce of their strength into the struggle, and that even then the end is a long way off. I take all these facts into account in expressing my confidence in the victory of right over might, of right over wrong.

AFTER WAR PROBLEMS.

After war problems are going to be harder nuts to crack than were war problems, though the process of cracking will require different methods from those used in breaking the morale and man power of the Huns. The repatriation of our fighting men will be Australia's first duty when peace comes round. I am in great hopes that the quarter of a million returned soldiers will prove a leavening of the State populations, tending towards a great awakening of the people of the Commonwealth. The deep-rooted love of country, which was the

main cause which prompted our manhood to readily respond to the call of the Mother Country in the hour of her grave peril, may, when the war is over, be raised to a higher power, a larger and more supreme patriotism. It may be that England and her Dominions, in losing tens of thousands of their bravest and best, will have found themselves. The self-sacrifice of those legions of Britain's sons must in the long run produce most fruitful and abiding results, all tending towards the advancement of liberty, justice, and freedom throughout the world. We are all proud in the boast that we are British citizens, and that position carries with it even greater responsibilities than it ever did before, due to the new spirit which is abroad to-day throughout the Empire, which spirit will be fostered and quickened by every true citizen according to his or her ability, and so secure that out of the immortal sacrifices made in this war a new Empire will arise, stronger, wiser, more confident, and more self-respecting than it ever was in the past.

In the few words I have so far addressed you I have steered carefully clear of matters of agriculture, for the sound and simple reason that I am still looking on and observing where South Australia's chief industry is concerned, and it would not be either politic or wise for a novice to address a company of experts on their own pet theme. Should I do so I would give a fair illustration of the saying, "Fools rush in where angels fear to tread." I would, however, confess the hope that in the opening up and development of new agricultural areas we may have a considerable amount of that heaven I spoke of just now—the returned soldiers—added to our farming population, and that as time goes on the South Australian farmer may become even more famous than he is to day in both his methods and the results he obtains. Once the sword is beaten into the ploughshare—and God grant that blessed day may soon dawn—and provided there is a unity of purpose among the people, the work of the Commonwealth hive of industry should go ahead by leaps and bounds.

THE MINISTER'S SPEECH.

The Minister of Agriculture (Hon. R. P. Blundell, M.P.) referred to the work of the Agricultural Bureau, and the effects of the war, which had brought upon the people a very serious obligation. Among other things, they would have to provide for the re-establishment of the returned soldiers in civil life, and that would involve the expenditure of millions of pounds. It was evident that a large proportion of the 32,000 men who had left the State desired to settle upon the land. Cards requiring the statement of their previous occupations, and those they wished to follow when they came back to South Australia, had been circulated among the men. So far 11,505 cards had been examined. Out of that number of men, 2,937 had intimated that they desired to go on the land, but could resume their former occupations—their positions were being kept open—and 5,820 desired to become primary producers, but had no promise of employment. On that basis there were between 24,000 and 25,000 soldiers who hoped to spend their future lives on the soil, and that aggregate did not include those who were on the land when they joined the colors. He was satisfied that

nothing could be better for the State, or for the men themselves, than their settlement upon the land. (Hear, hear.) Besides assisting those men to realize their ambitions, the Government intended to introduce a Bill this session to provide that all the privileges of land settlement available to the South Australian soldiers should be made available to the men from Great Britain who had fought side by side with them. He sincerely trusted that wherever the Government might purchase land for the returned soldiers, the farmers adjacent would become the helpers and advisers of the new settlers.

CO-OPERATION AND PRACTICAL HELP.

Proceeding, the Minister appealed strongly for greater co-operation among the primary producers, and mentioned that the Government proposed to place before Parliament a Bill to enable advances to be made to co-operative concerns in which the farmers were interested for the purpose of fostering butter, cheese, bacon, jam making and fruit drying industries. He believed that it was better for the Government to assist in a practical manner in the encouragement of co-operative effort, than to try to secure the desired development by a State business. (Hear, hear.) He assured them that the Government was not going to interfere with good old private enterprise, except to the extent of helping the farmers to help themselves. Such assistance would enable the development of a number of industries which could not make any practical progress now owing to the absence of essential facilities. And for that position they could not fairly blame private enterprise. He emphasized the need for sheep on the farms, and believed that it would be one of the best things but if practical help could be given to farmers to run flocks. He favored the development of the pig industry by the offer of bonuses for export, and the payment of a fixed price to the farmers the whole year round. In conclusion he urged the delegates to remember that the interests of the country and of the city and the town were indissolubly bound together, and pointed to the great importance of bringing the employers and the employees into closer and more effective touch with each other. (Applause.)

GOOD PROGRESS MADE.

The Chairman, in a happy little address, indicated that the Bureau had made distinct and definite progress in the year, and that since the beginning of the war 29 Branches had been formed, which was highly gratifying. Much of the success achieved had been due to the energy and capacity of the Secretary (Mr. Finnis), an excellent officer, of whom they were proud. Mr. Jeffrey then referred to the splendid character of the services rendered to the country by the experts connected with the Department of Agriculture, and directed emphatic attention to the serious position of the State's flocks. He was convinced that the marked falling off in the strength of their flocks had not been due to the drought alone, but also to a certain amount of carelessness. In their own interests, and in the interests of the State and of the Empire, wherever possible, it was essential that the men on the land should keep sheep. The prospects were excellent, and personally he

could not see wool get cheaper for a long time. (Hear, hear.) In regard to the wool scheme, it had been kept as free from political influence as possible, and unquestionably it had done good work. He had just returned from Melbourne, where he had been engaged with others for a month preparing a table to form the basis of prices for the coming season's clip. Notwithstanding rumors to the contrary, and the fear entertained by some pastoralists that the wool would have to be held on the stations indefinitely, if he was any judge the appraising would be well in hand by the middle of October, and the growers would be receiving their money within 10 days of that period. (Applause.)

At the instance of Mr. F. Coleman, seconded by Col. Rowell, C.B., a hearty vote of thanks was accorded His Excellency the Governor for opening the Congress.

TUESDAY MORNING.

LINES AND POINTS IN RELATION TO THE SYMMETRY OF THE HORSE.

The Government Veterinary Lecturer (Mr. F. E. Place, B.Sc., M.R.A.S.E., B.V.Sc., M.R.C.V.S.) delivered an address on this subject.

FODDER CROPS IN THE MALLEE.

Mr. J. M. Braithwaite (Halidon Branch) read a paper, entitled "Fodder Crops in the Mallee," as follows:—

In taking up my pen to write on this subject, I do so as you might say in fear and trembling, as the question of trying to grow suitable fodder crops on partially cleared land that has only a small rainfall is one that needs very careful study and attention. The late drought should have brought home to the man on the land the great need for something to be done in this line, especially so as to the farmer in the mallee. We all hope and trust that Australia will never have to face another drought of the same magnitude. So far as my knowledge goes nothing has been done on an extensive scale in this line, but only on the small experimental plots round the various homesteads. We must therefore consider the question from all its aspects. We have it from expert authority that there is an ever-increasing demand for stock of all kinds, and there is no doubt that livestock of all kinds is bound to be seriously depleted in numbers on the other side of the world on account of the war taking so many off the land, and causing a shortage in the breeding up of all classes of stock, so to what better use can we put our farms than going more fully into the question of fodder and of necessity, stock raising.

We must first take into consideration the class of land that has to be sown for fodder. The bulk of the land that is classed as mallee land is of a sandy, loamy nature over a clay subsoil, and I should say adequately suited to the growing of most fodder crops. Many farmers are afraid to sow the various seeds to produce fodder as they think they have enough worry in keeping the land clear of the native weeds and grasses, &c., before the land is again put under crop. If he would only realise the amount of good he is doing by sowing his stubbles and

fallow, having it eaten off by stock and then reworked, the farmer would not hesitate to carry out some scheme or other of producing fodder, as he both adds to the value of the coming cereal crop, and is also improving his finances at the same time.

There is a great variety of grasses, roots, and plants that come under the title of fodders that are too numerous to tabulate. They can be divided into classes—(1) Those that are mainly grown in summer but do not become available until the winter sets in; (2) forage crops that are chiefly winter and spring grown, and become available in the early summer and summer months; (3) forage crops that are mainly spring and summer grown, and become available in midsummer. I should choose one that would become available in the summer months, when most natural or native feed is lacking. But as there is such a lack of knowledge as to which is the most suited class of fodder, it is difficult to arrive at any definite conclusions, so that it must be left to the farmer's own discretion as to what is the best fodder crop for his district.

In preparing the land for fodder I would advise leaving out so much land each year. If the ground is new, that is to say, has been only cropped twice since rolling, I would advise the farmer to burn off the stubble as soon as possible to check the growth of shoots. Although we are given to understand by Professor Perkins that continuous burning of stubbles is detrimental to the land, firing must be carried out to eradicate the shoots for the first five years, this is for land that is to be left for bare fallow, then crop. If the land is to be worked on the three-year system, that is, grass, fallow, crop, then I would advise leaving the stubble, as it forms shelter both for young fodder plants and also for young stock.

We will deal firstly with grasses. Most grasses can be grown to advantage in the mallee, such as crested dogs tail, meadow cats tail, or Timothy smooth meadow grass, cocksfoot, fox tail, Rhodes grass, pampas grass, and lastly rye grass (Italian). Of the various grasses I should take rye grass and cocksfoot as being the most suitable, as they stand the stress of the sun and heat better than most of the others, although I have seen at Parilla fair results from most other kinds of grasses. I would advise mixing grass seeds before sowing, to get a fair proportion of each sort. Grass seeds can be sown either through the drill, mixed with super., or by broadcasting. I prefer the latter (broadcasting) with a good harrowing after. If the land is to be burnt after reaping I would broadcast and harrow. If the stubbles are to be left I would sow through the drill.

Lucerne.—It is needless for me to speak at any length on this class of fodder, as every farmer knows the value of this plant. I would drill in say 8lbs. of seed, mixed with super., to the acre. I should say that a little lucerne seed mixed with a grass fallow would give an excellent result.

Barley.—Of all fodder crops barley is the most suited to the mallee land, as it will thrive almost anywhere, and is the first available of any kind of fodder sown. I have tried it with most excellent results at Halidon. On a 15-acre patch drilled in March with 1bush. of seed and

lbush. of super. to the acre I carried seven head of stock continuously up to December 31st from the middle of June. The plot was divided into two, and the parts eaten down in turn.

Oats.—I am not in favor of sowing oats as a fodder crop, for in most cases I find that stock will not feed on oats, if there is any other kind of feed available owing to the oats having a bitter taste in the green stage. The oat is more difficult to eradicate from the following crop.

Rape is classed as one of the best for forage crops, but there is a great deal of objection to rape, as it is so liable to aphid should a dry spell set in. But I would not class this valuable fodder plant out on the mere chance as its rapid growth and sterling feeding properties are too well known, especially where sheep are kept in large numbers, to pass over lightly.

Sorghum.—I would not advocate growing this class of fodder in the mallee, as I understand it takes more moisture out of the ground than most of the other fodder plants, although I believe it is grown to very great advantage in districts where the rainfall is good and more certain. Clovers, although very well adapted to districts where the rainfall is good, I do not think could be grown to advantage in the mallee, in fact I have tested several kinds, only to find they wither away as soon as the warmer weather comes along. Vetches would do best sown with other fodder crops, or could be sown in conjunction with mustard in two separate paddocks.

Peas.—I am of firm opinion that peas could be grown to great advantage on the light soil of the mallee, and there is no question as to their value as a fodder crop. They can be sown broadcast, and either cultivated in or harrowed, but I should say they required more care and attention than some of the other fodder crops.

Turnips and swedes both can be grown on the light sandy soil. Experiments have been carried out here with very satisfactory results. In one case where the seed was drilled in along with super., they did remarkably well, and several dray loads could have been gathered.

Evening Primrose.—This fodder plant has been tried with marked success on one of the farms in the district, sown through an ordinary drill, 6lbs. of seed and 112lbs. of super. per acre. This was on a 10-acre plot (sand). Cattle do well on it, but more especially sheep. More extensive plots are to be tried in the near future.

African veldt grass has also been sown rather extensively on the same farm, mostly on the flats, where it has done very well. It is a rapid grower, and horses do very well on it. Cattle and sheep thrive very well on it also. It is sown at the rate of 3lbs. of seed and 70lbs. to 80lbs. of super. per acre.

I have not taken the wheat plant as a crop to be sown as fodder, as I find there is generally sufficient wheat spilt off the combs of the machines to provide ample seed if other fodder crops are to be sown. There are many other classes of fodder plants, &c., that could be grown to advantage on our light soils, but I have not the time to go into them.

In summarizing the facts before us:—Fodder crops will require more care and attention in the future by the farmer in the mallee.

He will have to realise that he cannot be solely dependent on the growing of cereals. He will have to go in for more intense culture than in the past. Of course the additional cost of labor will have to be taken into account, but this I class as a minor detail in comparison with the results. Mallee farming is only in its infancy, and there is not the slightest doubt that the land can be made to yield a great deal more than it does at the present time. More thought will have to be given to what science is trying to teach us. When we consider the amount of increased taxation that will have to be faced on account of the war, drastic changes will have to be brought into force in the farming community to meet it. Professor Perkins tells us that the Australian farmer may have to vary his methods in order to secure higher gross returns from the land. The sooner we realise that fact the better for the farming community. The growing of fodder crops and rearing of more stock is one way out of the difficulty. There is an ever-increasing demand for foodstuffs of all kinds, so why not let us be foremost in the field and work our farms to the utmost extent to meet this demand. We have the credit of being able to grow the finest wheat in the world; why not let it be said that Australia can and will supply the finest stock of any kind.

THE DISCUSSION.

Mr. H. M. Tuck (Balaklava) believed the time would come when farmers would go in more for mixed farming. Full success had not yet been attained with fodder crops, but the efforts should be continued.

Mr. H. T. Noske (Cygnet River) strongly recommended the growing of Westerwolt's rye grass and subterranean clover.

Mr. G. A. Vigar (Mount Hope) spoke of the possibilities of King kale, and thought that the Government should be asked to assist farmers to stock their farms.

Mr. J. T. Halliday (Glencoe) thought more time should be given to finding out what grasses were best suited to various districts, and suggested that experimental plots might be conducted under the supervision of the Department of Agriculture.

Mr. F. Masters (Roberts and Verran) spoke of the growing of fodder crops as a line that farmers would eventually take up for the successful raising of stock.

The Director of Agriculture (Professor A. J. Perkins) congratulated the writer of the paper, and said that the growing of fodder crops in the mallee and grazing them off would not only be beneficial to the stock, but would improve the land for cereal growing.

Mr. W. J. Spafford (Superintendent Experimental Works) said farmers were dependent upon grasses of annual growth, and he recommended the installing of silo plants for the storage of fodder during seasons of rank growth.

NOXIOUS WEEDS.

A paper, entitled "Noxious Weeds," was read by Mr. A. L. McEwin (Blyth), as follows:—

The first Noxious Weeds Act was passed or assented to on October 21st, 1862. This was enacted to prevent further diffusion of the

Scotch thistle, variegated thistle, and Bathurst burr. Persons who had anything to do with those thistles can well remember time, labor, and money spent in trying to eradicate the former two thistles, and the result—it took the powers that be till December 9th, 1887, to discover that the Scotch thistle and the variegated thistle did no harm; or I suppose found that it was practically impossible to eradicate them, so they were cut out of the list of noxious weeds. The Act referring to them was repealed, and the star thistle added.

Another Act was passed or assented to on November 25th, 1891, so as to include all plants and noxious weeds for the destruction whereof any statutory provision is made, of which there are some numbers. I intend to call the attention of the delegates of this Congress to the definition of a noxious weed and its destruction.

In the first place, what is a noxious weed? My definition of it would be "something that destroys all other feed, and takes possession of the land it grows on, and is productive of evil consequences." Second, who should be responsible for eradicating it? Third, who is to say what is a noxious weed? With regard to noxious weeds on the Statute Book, let us deal with the star thistle. This is something that we would rather be without, but I claim that it is in no sense a noxious weed any more than the Scotch thistle, the variegated thistle, or the artichoke; they are all a nuisance, the artichoke being the worst of the lot.

Anyone who has had anything to do with the star thistle knows that wherever it has become very thick, the land has carried just as many stock as ever it did, in fact the carrying capacity has been increased. It has been growing on many of the sheep runs for the last 50 years without reducing the carrying capacity of sheep per acre. This is a proof that it is not a noxious weed in any sense of the term. Then, again, the time it is required to be destroyed. It is useless to try and destroy it till December, at which time labor is unobtainable, and my experience is that the more it is cut the more prolific it grows; and further, if you try to destroy it at that time you are destroying good feed. It is what I term a winter feed, as it preserves the grass that grows amongst it, or rather it grows up amongst the natural grasses and protects them, and immediately the first winter rains fall you will find the stock amongst them eating them and all the other feed they have conserved.

Then there is the Cape tulip. Who thinks it possible to destroy them once they have got a good hold of the land? If the land were given to anyone for clearing it of this weed they would not undertake the job. This weed is injurious to stock when put on it if not used to feeding on it, but stock that is continually running on it take no harm, provided there is ample feed there for them in addition. Cape tulip does not interfere with a wheat crop, but is not good amongst hay. These two weeds should, in my opinion, be removed from the list of proclaimed weeds under certain conditions which I shall name later.

The Bathurst burr is a noxious weed, and one that can be overcome, because it grows during the summer, and if destroyed in March is easily killed. Its burrs are a nuisance in wool, and stick to everything they come in contact with.

Salvation Jane is a weed that should be overcome if possible, as it seems to me to take possession of the land, and is useless for feed. There are several other noxious weeds, but I do not propose to deal with them, and there are some that are worse to the farmer than any noxious weeds I know. Let me instance the wild turnip. There is no weed I fear so much as this, yet, to place it as a noxious weed and compel some landowners to destroy it would mean ruination to them. I might also mention stinkwort, soursobs, sorrell, and paddy melon.

Referring to my second query, "Who should be responsible for eradicating the noxious weeds," my reply is "The local governing bodies, be they district councils or municipal councils, or the Government." All noxious weeds come by stock travelling on the roads or other carriers—birds of the air distribute them also—and why should an individual be responsible for weeds brought along and sown along the road that happens to be past his property. I would make it compulsory where an individual has introduced any new noxious weed on his land to destroy it, and every property owner should be an inspector, so to speak, to report any noxious weeds on any roads or public place.

The keeping down of noxious weeds is for the benefit of the district. The local governing bodies would have the command of the whole wealth of the district behind it, and should be able to declare a special rate for the purpose. Just as the Health Act throws on the local governing body the responsibility of controlling any contagious outbreak and administering the provisions of the Act—to meet the expenses of which a health rate is declared—so the same body would be responsible for the destruction of noxious weeds, and a rate would be made to allow this to be done, making everyone responsible for his own protection. It is surprising how much selfishness there is in the world, and where no responsibility is there should be no voice in the matter. I am reminded of the labor and money spent in the past in destroying noxious weeds, and one might well ask the question, "What good has been done?"

Taking the third query, "Who should say what is a noxious weed?" I think there is a good deal in the New Zealand Act which throws the responsibility on the councils or shires. The people concerned have a direct voice in the matter, and if a majority in a district says that certain weeds must be destroyed, and they are finding the wherewithal to do so, they have a right to demand that they should be destroyed.

I have yet to learn that any serious harm has been done by many of the proclaimed noxious weeds where cultivation is carried on; in almost every instance cultivation will easily destroy them. In conclusion the Noxious Weeds Acts are, in my opinion, unjust and unworkable, and I would recommend that they be repealed. I have no hesitation in advocating that the whole of the responsibility should be thrown on the local governing bodies, who should be compelled to keep all centres of the roadways clear for at least 33ft.

THE DISCUSSION.

Mr. A. Fisher (Tatiara) did not agree with the views expressed in the paper. The Noxious Weeds Act had failed, not because of any weakness in itself, but for the reason that it had not been effectively administered. He suggested that the Government should appoint inspectors to see that the Act was enforced without inflicting any hardships on the farmer.

Mr. W. B. Stacey (Moonta) said the Cape tulip was the most troublesome noxious weed he knew of, as it was so tenacious of life. If the Act were properly administered by the district councils, the pests would be eradicated.

Mr. S. Eyre (Georgetown) said there were many Crown lands from which noxious weeds had not been removed.

Mr. J. Potter (Clarendon) said district councils should be compelled to destroy all weeds, whether on roads or private property, and the cost should be met by the striking of a special rate.

Mr. A. P. Blesing (Port Germein) did not think the star thistle would ever be eradicated. Messrs. W. Folland (Goode) and S. H. Ellis (Bundaleer Springs) spoke of the advantages that would be derived if colored plates of noxious weeds were printed in the *Journal*.

SUGAR BEET.

Mr. H. Hart, of Millicent, contributed a paper on "Sugar Beet," which was read by Mr. R. Thompson, of Quorn, as follows:—

Together with others I visited the Maffra Beet Sugar Factory in June, last, and the following is an abridgment of a paper read at the Millicent Bureau:—

Maffra is 131 miles on the Gippsland side of Melbourne. Last season was the best the factory has had. It treated 15,000 tons of beet grown on 1,200 acres, which produced 1,700 tons of sugar, valued at £47,000. About 200 acres were destroyed by flood. The profit was sufficient to pay £7,000 accumulated interest, working expenses, and then leave a credit balance. The factory originally cost £70,000, and is capable of treating from 30,000 to 40,000 tons of beet, or more than twice the quantity available this season. The profits would consequently be much larger if the factory was working to full capacity. The growers received 27s. 6d. per ton last season, and one grower assured us he cleared £1,000 off 100 acres. All the work was done by contract.

Dr. W. Maxwell's report, published by the Victorian Agricultural Department, February 1st, 1910, points out that the want of experience and qualified labor were the principal causes of failure at the beginning of the sugar industry at Maffra.

A comparative statement of the cost of labor in America (including both white and Japanese labor), shows that the Japs. receive 8s. 4d. and 9s. 3d. per day for ordinary field work and irrigation; white teamsters and cultivators receive 8s. 8d. and 10s. 9d.; factory hands, 8s. 2d.; and special workers, 12s. 6d. The figures are very old, and I believe have risen very much since. An extract from the *Victorian Journal of Agriculture* for August 10, 1910, is as follows:—"Selection of Site

and Soil.—Good, warm, sandy loams of good depth. Depths of cultivation, 12in. to 14in., by ploughing and subsoiling. Sow seed from middle of August until end of September."

GROWING BEET AT MAFFRA.

The land is leased for beet growing at from 30s. to 40s. per acre. It is first ploughed about 4in. deep, then well worked to kill all weeds. After about eight weeks it is again ploughed to a depth of 10in. to 12in. It is again well worked with the harrows, and left for a couple of weeks. It is then drilled with 10lbs. to 12lbs. of seed per acre. It is best to sow thick to run the plants up quickly. As soon as possible the cultivator is worked through the rows, four at a time. The rows are about 18in. apart. They are hand-hoed, and the plants thinned to 8in. apart, and the rows are again horse-hoed with a 4-row Planet Junior implement. The land cannot be worked too much for beet. When ready to harvest, a double sub-soiler made for the purpose is worked as close to the row as possible to loosen it. The roots are then thrown six rows into one. The toppers cut off the tops, for which they are paid 3s. per ton. A good topper can do four or five tons a day. The beet is then loaded into tip drays with eight-pronged ball-pointed forks. A good man can load about 1½ tons on to a dray in about 20 minutes. All carting is done in drays, and one man has charge of two drays. The roots are carted to the weighbridge, the weight is taken, and the dray is driven up a ramp and backed against a nine-ton railway truck, and tipped straight into the truck. The beet is taken to the factory and shovelled into a trench with sloping sides and a strong current of water in a trench below some short boards; when wanted in the factory two men remove some of the boards and shovel the beet into the water, the force of which carries the beets into the factory and cleans them. They are then caught up into a huge wheel, about 20ft. in diameter, which deposits them on to a platform. From there they fall into the shredding machines, which cut them into small shreds, about 6in. long and about ¼in. thick. They are next taken to the diffusing pans, which extract all the sugar out of them by the aid of hot water. The juice after going through several processes is very similar to the old "ration" sugar, but contains more moisture. It then goes into oscillating pans, which revolve at 1,200 revolutions per minute. They are about 3ft. in depth and diameter. The dark sugar forms a wall all round about 5in. thick from bottom to top. The centrifugal force sends the molasses through very fine slits in the sides. It is then washed with a jet of cold water till quite white, and afterwards dried, sifted, and bagged.

SOUTH-EASTERN TESTS.

I have quoted the cost of labor in America in case that some may say that labor here is too dear. I have already said that one grower cleared £1,000 off 100 acres. It puzzles me why there is not more beet grown at Maffra and further afield. The rail carriage is only 3s. per ton for any distance. I believe there are many thousands of acres in the South-Eastern corner of South Australia, and along the River Murray that will grow sugar beet. That it can be grown successfully has already been demonstrated by experiments conducted on a small scale. Samples

of beet grown in the South-East during the past two years by Messrs. Geo. Riddoch, F. Davison, Jno. Livingstone, P. Nilssen, F. R. Sassanowsky, C. J. Parish, myself, and others, have been kindly analysed by Mr. Williams, the enthusiastic manager of the Maffra factory, and the tests were highly encouraging. A sample forwarded by Mr. Davison just before the factory closed down this year yielded 16.63 per cent. of sugar, with a purity of 87.6 per cent. Purity of the juice is as essential as the percentage of sugar. Mr. Davison's beet was grown at Brancepeth, in the hundred of Caroline, on a dark, sandy loam that had grown a very heavy crop of potatoes. I saw many patches of similar country on the way home by coach from Casterton to Mill-cent. Mr. Riddoch's beet, grown at Koorine, gave 15.71 per cent. of sugar and 86.9 per cent. purity; Mr. Sassanowsky's, 16 per cent. and 79.8 per cent.; Mr. Parish's sample, 15.66 per cent. and 83.4 per cent. These figures are better than those from most of the principal beet sugar producing States in America, where, according to analyses from 11 States, the only two tests exceeding the South-Eastern results were Colorado, with 17.1 per cent. of sugar and 83 per cent. purity, and Washington, with 17 per cent. and 85 per cent.. Moreover, our beet was grown by amateurs, whereas in America the cultivation is conducted on highly scientific lines. I grew over 12 tons last season, and over 21 tons this season with a heavy allowance for topping. A sample from each crop was tested with from fair to good results. Unfortunately, a second sample, which I believe would have given good results, did not reach Maffra, nor did a sample from the peat lands at Rendelsham. The soils most suitable for sugar beet is an open question at present, and can only be determined by actual experiments. The experiments conducted so far have proved that the beet can be grown over a large area of dissimilar soils. The peat, shelly, and heavy black soils have to be tested by actual cultivation, but analyses made at the request of Mr. Burchell, of Beachport, show that they all contain the necessary ingredients.

EXPERIMENTS THAT COST NOTHING.

It may be argued that many people cannot afford to grow plots of beet merely as an experiment. There need be no loss or waste of effort. On the contrary, the work would be well worth while, as every scrap of the crop will be greedily eaten by cows and pigs. The beets will keep, and will be very acceptable when other food is scarce. During the drought of three years ago the sugar beet was a godsend to the dairymen in Gippsland. There is no waste at the factory, as the growers take away the pulp or shreds, and feed it to their stock, while the beet tops, after the roots are carted out of the field, are used for fattening sheep and cattle. The value of seed used on an acre by the aid of a good drill is very much less than the cost of planting the same area under potatoes, and should easily balance the extra cost of labor in thinning out the plants. Further, the sugar market is not so likely to be glutted as the market for onions or potatoes. During the season just closed I grew 20 tons of mangolds on light sandy soil, whereas my beet crop yielded fully 30 tons, tops included. I gave the beet better attention, by earlier thinning and hoeing. My root crops have enabled

me to carry from two to four times more stock, in good condition during the past 25 years, than I could have kept on similar land in this district without the roots and other fodder crops, together with old grass, chaff, or hay. I was fully stocked when the last drought occurred, but my stock remained in fat or good order. An area of mangolds or beet will carry at the rate of seven sheep per acre for 12 months, or, roughly, 900 sheep for three months on 30 acres of roots. You can thus spell your grass land, and allow the natural feed to grow during three months of the colder weather.

HOW TO PEOPLE THE LAND.

After the war closer settlement problems, particularly in connection with the repatriation scheme, will claim the earnest attention of all State Governments. In Victoria we were assured that the Government intends to pin its faith to sugar beet as a means of settling returned soldiers on the land. The idea is one worthy of the early consideration of the South Australian Government. In the South-East alone there are thousands of acres, practically idle now, which could keep sugar factories fully supplied. Sugar beet growing, in conjunction with dairying, is much more profitable than onion or potato growing, as a more regular price is assured. With the assistance of a Government factory and cheap railage, I am confident that the occupation of our waste spaces would be assured. Should the erection of a sugar factory in the South-East be seriously contemplated, the site should be one that will meet the convenience of the largest number of growers on the most suitable acreage. That must be determined by experiments, which will take some time. The growers, too, will have to be educated. They must learn the best methods, while labor must also be trained for the work, as hoeing and thinning mangolds and beet requires practice to ensure proficiency, as in any other occupation. Dr. Cameron advised us to secure the services of an experienced Dane. There is much more that might be written upon this highly important industry, but perhaps I have given you sufficient information to arouse an intelligent and practical interest in the subject.

THE DISCUSSION.

Mr. G. F. Plummer (Morgan) said the fact that there were no factories established in the State for the treatment of sugar beet tended to retard the progress of that industry. Professor Perkins doubted whether it would be wise to take up the matter. Inquiries should first be made to see if Queensland were able to meet the requirements in sugar for the Commonwealth. He did not think it would be possible to export sugar profitably. If the Queensland cane industry were not equal to the demand, there might possibly be an opening for sugar beet production, but careful attention should be given to the economic question before asking the Government to take any steps in the matter.

Mr. R. Thompson (Quorn) thought the South-East growers might request the Government to pay the railway carriage of the product to Maffra, with a view of testing the possibilities of the industry.

THE FOX AND HOW TO CONTEND AGAINST HIM.

Mr. W. H. Cuming (Strathalbyn) read a paper dealing with the destruction of the fox, as follows:—

It is about 12 or 15 years since the fox commenced to kill lambs in the Strathalbyn district. There were not many at first, but they have been getting worse every year, and have now become so bad that quite a number of sheep breeders have decided to give up lamb raising and only keep dry sheep. There is very great difference of opinion about the pests; one sheep owner will say he would rather lose a few lambs and keep the fox, because he kills the rabbits. Another says it does not matter to him as he only keeps dry sheep, and so on. The man who does keep on lamb breeding and has no rabbits has to do all the poisoning and put up with the loss of a lot of lambs.

In my own experience on 500 acres, all clear land with no cover for vermin, the average loss for the last 10 years has been 20 lambs per year from 200 ewes, or 200 lambs from 2,000 ewes. Now if we value those lambs at £1 per head, my loss is £200 in 10 years; what must it be to the whole of the State? I venture to say thousands of pounds, and in a few years the loss will be tens of thousands. The number of foxes killed in 10 years was 120. During the lambing season just finished 10 lambs were killed and 16 foxes poisoned. The fox was not so hard on the lambs this season on account of there being so many mice about. It is not only the loss of the lambs that has to be considered. The ewes are frightened off their camp at night, and that will cause a percentage of stillborn and motherless lambs. The maiden ewe is the worst; once frightened away from her lamb she will not take to it again, and it does the ewes a lot of harm being rushed off camp every night during the lambing season at just the time they should be kept quiet. The Merino ewes are more timid than the long wools and Shrops., and will not try to defend their lambs, so the loss is greater with the Merino than it is with other breeds. So far the foxes have only killed lambs, but as time goes on they will kill full-grown sheep when there are no lambs about. Now if the pest increases so fast in the thickly populated country, and kills so many lambs, even when we are watching them, how much worse it will be in the rough outside pastoral country. The Flinders Range is an ideal place in which to breed enough foxes to kill all the lambs bred in South Australia, and the longer the pest is left to breed up the more loss the stock owner will have to put up with. It is not only the lamb breeder that suffers; the poultry man is in danger, for turkeys, geese, fowls, ducks, and even young pigs have to be shut in fox-proof buildings at night, and then they are not safe, as the fox will very often take poultry in the day time.

The above losses must show what a serious thing the fox trouble is, and it is quite time that action was taken to combat the pest, but it must be done by Act of Parliament.

HOW TO DESTROY THE FOX.

It was always thought that the fox was a very cunning animal, but that is not correct. The dingo is a long way ahead of the fox for

cunningness. One can use almost any sort of meat for bait—suet, caul fat, liver, young rabbit, lamb, fish, mice, opossum—but I find the rosella parrot the best, for if they are passing a parrot bait they must have a bite at it, and very often swallow the parrot, feathers and all. By using parrot baits it is always quite safe to take sheep or cattle dogs after the stock without fear of getting them poisoned, as they will not eat a parrot. When laying baits put them close to a sheep or cattle path, or any old road through the paddock. Place all meat baits in. under the ground; if parrots, cover over with bark, leaves, or grass to hide from night birds. When a bait is missed, if in hilly country, always look on the higher land, above where the bait was laid, and the dead fox is mostly found. If on the plains search along the path or road, and the fox will soon be found. Along the banks of creeks is a good place to put baits. Do not be afraid of using too much poison; if too little is used the fox will get away and will not be found, and the skin will be lost. Put as much strychnine as will lie on a threepenny piece in each bait. Always put baits out six weeks before the lambing starts. Keep putting some out every week up to and through the lambing season, and a few all the year round. If all stock owners would lay poison the fox pest would soon be reduced to a minimum, and would not be the menace to the breeder which it is at present. I have been over 40 years fighting vermin—first the dingo, then the rabbit; the last 14 years the fox, and the last-named is going to be very much worse to contend with than either dingo or rabbit.

RABBIT DESTRUCTION.

Mr. F. Lock (Dowlingville) read a paper on "Rabbit Destruction," as follows:—

The rabbit nuisance has been with us for more than 40 years, and it is very difficult to estimate how much labor and expense it has cost in this State. In some of the farming districts the rabbits are doing more damage than ever this year, and if they are allowed to keep on increasing and spreading as they are doing at the present time they will, in a year or two, overrun the country. As one travels about some of the Government roads on Yorke Peninsula, one cannot but be struck with the seriousness of the question. We would be astonished if we realised how much feed and crop they are responsible for in one year, and yet we farmers do not do nearly as much as we should in helping one another by working at the same time to do away with the pests. Some people work very hard, but very soon the work has to be gone over again, because there is property adjoining in which the rabbits are not kept in check, and they soon come in from there. There are places where most of the neighbors work hard, but they cannot make up their mind to work at the same time. One man goes out, his neighbor is not ready, has a week's more ploughing he wishes to finish. Perhaps another is off for a month's holiday; will do something when he gets back. The first man cleared his land, but by the time the other men get going his land has been restocked from theirs. They get to work and do as much as the first man. Then in a few weeks someone else wakes up to the fact that his crop is suffering and he must do something, and so it goes on. They have done good, certainly, but not a quarter of

the lasting good it would have been if they had worked at the same time. There are a few people who do not trouble about the waste they are causing to themselves or anyone else. They have to get on with their work, shutting their eyes to the fact that what they are putting in one pocket is dropping out of the other, forgetting that they have a moral obligation to themselves and to other people as well. Now it needs no proving that the rabbits do a lot of damage. We can see it. I think all will agree that we need some more effective way of going about it than we have used in the past.

In dealing with the subject we are conscious of the fact that we are placing it before men of wide experience. With us, they have used the poison cart, have ploughed them in, dug them out, drowned them in their holes, and have smothered them in their holes—all very good ways of going to work, but we have not received a quarter of the benefit of our work that we should have done. With all our work and experience the trouble still exists. And we should be glad if those who are concerned could be aroused to see that the trouble was more effectively dealt with. We know that want of method has been the failure in the past, and it will be in the future if we do not see to it. Can we not think of some scheme that can be brought into operation so that we could get the whole of the State where the rabbits are to act at the same time. Some lasting good would be done, and the pests would get such a setback that they would not recover for some years.

I would suggest that the matter be discussed by the various Branches, and that the Government be asked to proclaim a week, say about the middle of February, for people to start destroying the rabbits. Means might be adopted to deal with the rabbits that infest some of the Crown lands. Perhaps some sort of a vigilance committee might be formed in each district, where the rabbits are numerous, to keep the matter before the public mind and to see that the pest was dealt with in some effective way.

Another paper on "Rabbit Destruction" was read by Mr. V. V. Crase (Bookpurnong East) as follows:—

One of the first things to be done in dealing with rabbits in farming areas, is to net your boundary fences. In larger pastoral properties this would be difficult and very costly, and other means would probably have to be relied upon. It is useless destroying your own rabbits if the fellow next door neglects to do so, and his rabbits come into your land. The netting should be not less than 3ft. in width, and where possible 42in. is preferable. All struts for strainer posts should be on the inside of the netting, otherwise the rabbits climb up and jump over, especially when the feed is poor on their side of the fence.

For dealing with your own rabbits, when you have them fenced in, there are various ways and means. I believe the rabbit curse could be turned into a blessing with a little trouble, and if the canning industry were extended to embrace all farming areas where rabbits are bad, the farmer would derive a fair income where now he only gives vent to various expletives. The trade would have to be built up, and the demand catered for. Our Australian rabbits are somewhat different in

size and color and taste of flesh from the rabbit which is put on the English market. That animal is slightly bigger, has flesh more like poultry, and the gamey taste and texture is not so pronounced. In various parts of France and Belgium these rabbits are bred for the trade, and the quality has been gradually improved until we have the present well-developed specimen. This would be a serious consideration to the Australian rabbit breeders, and I feel sure no very great progress would be made until we realise that we have to find out what the market demands and then improve our article to make competition possible. However, we have the animal on which to work, and as we apparently cannot get rid of him, we may as well make what we can out of him.

The canning trade is the only channel through which we can make a profit out of rabbit carcasses, and trapping would be the best method of obtaining them. Where the supply is good trappers should be able to catch one rabbit per trap a night. The traps are set in the mouths of warrens, and visited just after sunset, at midnight, and before dawn, the captured rabbits taken out, and the traps reset. The use of wire-netting traps and ferrets is also a good plan, but the ferreter usually has a more worrying time owing to the ferrets (unless muzzled) eating rabbits in the burrow, and retiring to rest immediately. Even when muzzled, unless exceptionally well trained, they often cause trouble and waste of time. By adopting either of these methods the skins are obtainable, and are very profitable, though even at 1s. 6d. per lb. I do not think the breeder is getting a fair thing. The wonderful fur coats and hats, costing large sums, and known as ermine and sable are often nothing but good old rabbit skin; I have heard, too, that the State robes of our judges, which are adorned with ermine in emblem of purity of administration, are sometimes rabbit skin. However, the significance of this is too shocking to think about.

The above methods are the only ones I know of through which one may turn this curse into some sort of a benefit. In dealing with it as a curse to be exterminated regardless of cost we have various means at our disposal. The poison cart is the most popular, and with judgment is effective. Either S.A.P. or stick phosphorus is used with pollard. I have found that the rabbits take the poison much better if sugar is added to the mixture. A better method still is to procure a quantity of fennel, boil it and mix the poison in the strained fennel water. The smell of the fennel seems to dominate that of the poison, and rabbits like the taste and eat it well. The pollard must not be too moist, in fact just escaping the crumbly stage, as otherwise it dries in the trench and becomes hard. The best time to use the poison cart is just after a rain, when it will be found that the rabbits will go to any freshly-turned up ground, such as a trench or furrow and follow it up and thus come to the pollard.

Another method is the use of gas of various descriptions. Lazemout is good, but I have not had much luck with it unless carbide is used with it. The agents insist that Lazemout, upon coming into contact with the earth generates a gas which is sufficiently deadly. This has not been my experience, and I believe it needs carbide to carry it

through the burrows, when it will usually be found to do its work. The use of a pump to force the gas into the burrows is also a good method which has been successful in my district.

One of the surest methods of settling both the rabbits and the burrows is one practised in Victoria with huge success. A mixture of bisulphide of carbon with another ingredient, which unfortunately I have forgotten, is obtained. A piece of wool saturated with this is thrown down every hole but one, and the holes are immediately closed up. After a few seconds to enable the gas to penetrate right through the warren, a shovelful of ashes is thrown into the empty hole, the gas explodes, and rabbits and earth are shot into the air. The man with the shovel stands as far away as possible. In nearly all cases the warrens are so blown about that rabbits very seldom enter them again. In all cases of gasing it is advisable to tour the surrounding country with dogs and be sure all the rabbits are in the warrens before operations commence.

Another good method in sandy country during summer, where the warrens usually go pretty deep, is to go round each day with a shovel and fill in the holes. It is astonishing how much sand will run down the hole. The rabbits come and start to dig their way out, and the sand keeps on coming in until they are shut in both behind and in front. It is a good scheme to put a piece of newspaper about 6in. from the mouth of the burrow. The rabbits will not scratch against it, apparently disliking the rustle, and usually the sand will have filled in behind them and they are suffocated.

I remember hearing Mr. Spafford say that mustard was in reality a blessing, as where it grew other fodder crops of the same root variety would grow. I should like to see the blessing side of the rabbit curse developed, so that we might reap a return from them while we have them, and after exterminating them our land would be capable of a much greater carrying capacity of other stock.

DISCUSSION.

Mr. A. J. Brown (Frances), in discussing the paper on fox destruction, said they had asked the members of their Bureau to lay poison during February and March, and they had been most successful, as they had had a lambing of 96 per cent. He also spoke of the care that should be taken when handling the baits.

Mr. J. T. Halliday (Glencoe) said he had obtained good results by poisoning rabbits with strychnine applied to carrots and apples.

Mr. H. H. Davie (Mount Remarkable), in discussing the papers on rabbit destruction, said trappers in that district had been making up to £32 per month from the skins alone.

COLLECTION FOR SOLDIERS' COMFORTS.

A collection was taken up to provide comforts for soldiers on active service, and the sum received amounted to £20 6s. 9d. This amount has been handed to the League of Loyal Women, who have the matter of distribution in hand.

FREE PARLIAMENT.

The Horticultural Instructor (Mr. George Quinn) dealt with the means of preventing black aphid and curl leaf of peaches, and black spot of apricots, and with the causes of cherry trees shedding their fruit. He explained systems of spraying in connection with the former, and said that frost and cold weather were amongst the conditions which made for the dropping of cherries.

WEIGHBRIDGES.

On the motion of Mr. A. Jamieson (Yongala Vale), it was resolved that the Government be requested to appoint inspectors of weighbridges and wheat scales, and that the bridges be licensed. Mr. F. G. Williams (McNamara Bore) seconded the motion, which was carried.

COMPULSORY DIPPING OF SHEEP.

Mr. W. J. Dawkins (Gawler River) moved—"That the provisions of the Stock Diseases Further Amendment Act should be extended to include all district council areas in the State, and that only poisonous dips should be used." The motion was carried.

DUPLICATE RECEIPTS FOR WHEAT.

Mr. A. D. Matheson (Milang) moved—"That agents be required to give farmers a duplicate receipt showing the weight of each bag of wheat delivered." The motion was carried.

WEIGHING WHEAT BY WEIGHBRIDGES AT RAILWAY STATIONS.

Mr. J. C. Price (Paskeville) moved—"That the Advisory Board be asked to impress on the Government the necessity for installing the weighbridge system for weighing wheat at railway stations." The motion was carried.

FIXED STANDARD FOR WHEAT.

Mr. J. P. Bagley (Milang) moved—"That a fixed standard for wheat should be adopted." Mr. A. D. Matheson (Milang) seconded the motion, which was lost.

VISITS OF EXPERTS TO SMALLER BRANCHES.

Mr. C. T. Atkin (Kongorong) moved—"That the services of the experts should be more easily available to the smaller and outside branches." The motion was carried.

QUALITY AND SIZE OF CORNSACKS.

Mr. S. H. Ellis (Bundaleer Springs) moved—"That the Government be requested to take over the matter of supplying cornsacks while the wheat pool obtains, and to take whatever action may be necessary to bring under the notice of manufacturers the undesirable variation in the size and quality of cornsacks." Mr. F. Masters (Roberts and Verran) moved as an amendment—"That the Government be requested to enforce the present Act in relation to the size and quality of cornsacks." The amendment was carried.

NOXIOUS WEEDS.

Mr. F. Masters (Roberts and Verran) moved—"That the administration of the Noxious Weeds Acts should be vested in the hands of the district councils with independent Government authority behind, and that the schedule of noxious weeds should be prepared on the recommendation of a Select Committee." The motion was carried.

CLOSER SETTLEMENT.

Mr. S. Ockley (Penola) moved—"That closer settlement legislation should be amended, in order to provide that individual farms may be purchased by the Government and allotted under the system of extended payments adopted when large holdings are purchased and subdivided." The motion was carried.

PIGS.

The general management and feeding of pigs was dealt with in an address by the Principal of the Roseworthy Agricultural College (Mr. W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S.).

IMPORTS AND EXPORTS OF FRUIT, PLANTS, ETC.

During the month of August, 1917, 2,464 bushels of fresh fruits, 12,151 bushels of bananas, 3,395 bags of potatoes, 854 bags of onions, 140 packages of plants, trees, etc., 1,818 empty wine casks, and 61 empty cases were examined and admitted at Adelaide and Port Adelaide under the Vine, Fruit, and Vegetable Protection Acts of 1885 and 1910. Sixteen bushels of bananas and 80 bushels of apples (over-ripe) were destroyed. Seven cases of oranges were returned to Victoria on account of the absence of the necessary fruit fly certificate. Thirty-two packages of trees, 19 empty wine casks, and 61 empty cases were fumigated. Under the Federal Commerce Act 3,564 packages of dried fruit, 25 packages of preserved fruit, and 1,543 packages of citrus fruit were exported to overseas markets. These were all consigned to New Zealand. Under the Federal Quarantine Act 811 packages of seed, etc., were imported from overseas markets; 91lb. of spinach and 7lb. of turnip were destroyed and 14lb. of turnip was cleaned on account of the presence of weed seeds.

• During the month of September, 1917, 424 bushels of fresh fruits, 4,683 bushels of bananas, 5,246 bags of potatoes, 1,080 bags of onions, 19,346 cabbages, 700 cauliflowers, 382 packages of other vegetables, and 120 packages of trees, etc., were examined and admitted at Adelaide and Port Adelaide under the Vine, Fruit, and Vegetable Protection Acts of 1885 and 1910. Under the Federal Commerce Act 250 packages of honey were exported to London. Under the Federal Quarantine Act 159 packages of seeds, etc., were imported from overseas sources.

BREEDING A HORSE FOR GENERAL PURPOSES IN THE HILLS.

An address on the "Breeding of Horses for General Purposes in the Hills" was delivered by the Veterinary Lecturer (Mr. F. E. Place, B.V.Sc., M.R.C.V.S., B.Sc., M.R.A.S.E.) at the recent Conference of Hills Branches of the Agricultural Bureau held at Cherry Gardens. Mr. Place said:—

A request from Hills Branches to offer a few hints on breeding a horse for general purposes turns one's thoughts back to the coombes and moors of Devon, and the general utility horse found there, trotting merrily along on Sunday with the family in the dogcart (bringing Farmer Jan market-merry safely home in the small hours of Wednesday morning, though the gig has toppled perilously at many a creek), on Monday one of the plough team, Tuesday in the shafts of the roller, Thursday treading warily with the horse hoe between the rows of mangolds, Friday carrying Young Jan over bank and hurdle after the harrier, Saturday in the collar hauling a load of wood home from the orchard or copse—the horse that is a general purpose beast with a vengeance. Alas, such peaceful life has given way to the hauling of shells to the firing line, the charge of the Yeomanry, and the steady trot of the horsed ambulance; but our horse is there just the same, with Young Jan on the limber or in the litter.

THE REASON.

Why from the coombes of Devon, the vales of Yorkshire, the lakes of Westmoreland, from Scotland and from Wales and Ireland come the horses that can do these things? Because from the days of Alfred through the centuries, past the reigns of Edwards and Henrys, under the alarms when Elizabeth and the Georges ruled, shrewd breeders have forecasted their markets and bred for them.

We in Australia can now claim that our share is part of the Empire's needs, and it behoves us to follow our fathers and look ahead. We have of late years been a bit slack. The small man could pick up something cheap at the sales; the big man said it did not pay him to breed for the home or Indian markets, and His Excellency the Governor-General has seen, as I, too, have seen, the quality of the Australian horse on the down grade. But the hands of the clock are set back, and at Sinai or at Gaza the Australian horse has faced the danger and the glory with his rider. Biljim is taller and more wiry than Jan, and the Wallabi tougher and leaner than Dobbin; but side by side they carry the red cross banner of the cavalryman St. George ever forward.

It is up to us who stay at home to see that the yearling he left behind is a comely four-year-old for him on his return; and the way to do it is to have a clear idea of what we want, what he will want, and what his children's children will want. As with a nation, so with a horse, "What's bred in the blood will out in the bone."

PAST MISTAKES.

Perhaps our greatest mistake in the past has been a want of continuity in the type we have tried to breed. We have swayed from substance to style, wobbled from weight to gait, tried a roadster, tried a blood, fancied a draught, and used a pony, and, worst of all, bred from any sort of mare.

Governments may help us with the stallion, breeding societies be of use with the sire, but every man has to go back to the Arab method and trace his colts through the dam if he wants to set a type, and be sure that the four-year-old and the five-year-old trotting along with the van or the buggy shall be as like as two peas, and as steady and staunch as their dams at 18 and 20; and a couple of brood mares of the right stamp to suit Hills conditions are as good as a couple of irrigation dams, from the point of view of steady, profitable returns. But what are the conditions?

THE CONDITIONS MET WITH.

I take it that, first and foremost, the mare, like the Hills man, must have a constitution like iron; like him, too, a happy, easy-going temperament, not likely to be upset when a three-ton load of rhubarb takes charge on Greenhill—active enough to keep in front of it, and strong enough to hold it. Always well up to her feed, like her master, again, and yet not worrying much if it is 3 o'clock in the morning instead of 6 o'clock in the evening before she gets it. It must be "Never mind the weather" with her; "Never sigh, never cry, the sun will shine to-morrow" temperament.

THE TYPE.

Now what is the type that leads to this happy frame of mind? I have already laid it down at some length at Mount Barker, but perhaps I may be permitted to recapitulate the main requirements.

- Above all the mare must be a motherly soul—not one that is always squealing over the fence with a view to annoying her neighbors—and her character should be apparent in her eye, full and bold, but mild and kindly. I know of no point about a mare that will tell you her quality so well and so quickly as her eye; it sets the character of her face, and what I am looking for is a "pony" face—not diminutive, for I know that size and substance are very necessary, but that kindly, thoughtful look that reminds one of the Welsh mountain and the Devon moor, the broad face, full of intelligence, that makes the head

look fine—the head that the Arab has stamped upon the leading breeds all over the world. The head must be well set on the neck, full jawed and well muscled; the neck may appear to be rather on the short side, on account of the top muscle, but muscle you must have in the Hills, and the general tendency of Australian conditions is to fine that muscle down, so the brood mare may well have a little too much.

The shoulders must be deep, free from lumber on top, *i.e.*, withers must be strong, but clean, indicating a good “lay” of the shoulder, which means freedom of action when the load is being eased down hill, and extra leverage when it is being hauled up.

The back must be short and wide, and loins strong—they have a lot to do, and one does not take a weak wattle to use when a stringy bark pole is wanted.

Quarters powerful and deep. Look at the strong muscles of a well-built dog as he lopes over hill and dale after a hare; you want the same power, with a good share of speed, too, and your nicely rounded, plump little rump is not going to give you the leverage that a wide, straight, even, somewhat ragged quarter can. Then, too, width and roominess are wanted for the foal both before and at birth.

The ribs should be round and deep, especially the last one. A weak long last rib is enough to condemn a mare as a brood mare in the Hills. Such an one cannot wait hours for her dinner, cannot digest it when she gets it, and soon looks gaunt.

I prefer a tendency to nuggetiness—a certain “punchiness” of body, for the same reason that the neck must carry muscle—there is always the tendency in offspring to fine down; and when one looks down on the mare from the driver’s seat she should be a rubber-like wedge of muscle, with a distinct furrow along her back, not a roll of fat on each side, but a real billiard table cushion of resilient muscle. Tail nicely up, with a perky little cock to it.

Legs full of broad hard muscle above the knee and hock; gaskins that stand out like a Sheffield sprinter’s calves; knees and hocks broad, rugged, but clean; hocks must be as straight as a die, a little out behind rather than sickled, for a weak rounding hock is fatal for Hills work. The joint is the point d’appui for the lever power that lets the load down hill and heaves it out of the rut.

Below the knee and hock as short as possible, as flat and clean as a ruler, with tendons that stand out like whipcord; free from hair except the fetlock, to shoot the rain off the heels. Pasterns full of spring, but strong and clean, and hoof heads free from any suspicion of side bone or ring bone. If you want to know why, put a rough pebble in each boot and run from Cherry Gardens to East End Market and back. “No foot, no horse,” was never truer than when applied to

the Hills mare. She must have a hoof as resilient as a motor tyre, with the resistance of steel; dark in the horn, and strong in the sole, with a frog like a black rubber wedge between the pound bulbous heels. White, weak feet, with flat, weak frogs may do to prance round East Terrace, but they will surely bring about a pair of broken knees, if not a broken neck, on Anstey's Hill.

Weight pulls weight, and a low-set strong-built mare covering a fair length of ground weighs more than a gawky, leggy beast, and gets off the mark quicker with her load, and can hold it better on the hill, either up or down. She can walk away with it at a good swinging pace, and keep it up, and can trot on with clean, straight action up hill and down, loaded or empty, and be ready for her tucker at either end of the journey, and will be a very poor customer to the vet. Colic drenches and condition powders will not be required for such an one, even if tea, supper, and breakfast do get rolled into one meal.

THE SIRE.

When we come to consider the sire, we are up against a very practical difficulty, for every man can choose his mares and cull those that do not come up to standard, but the Hills farmer or orchardist cannot as a rule keep his own stallion, though I often call to mind the French farmer under somewhat similar circumstances, who keeps his own, working him alongside his mares in the team, and I sometimes think we might do more in that line ourselves. Again, our French ally has the advantage of the use of Government-kept sires, but as matters stand with us, we are to a great extent dependent on the enterprise of a neighbor, and often our choice is very limited, for the man who travels a stallion has not the general utility horse in view. He may be out to get heavy draughts, or to breed possible winners on the flat or over the sticks, and neither of these types will nick well with the type of mare we have sketched for our purpose. We have three main types of sire to consider—the pony, the weighty thoroughbred, and the heavier type that may perhaps be represented by the Suffolk, and certainly, if we could get him, by the Percheron. For Hills work they stand in the order named, the pony easily first, for it is the pony build and the pony temperament that we want for saddle or harness. Do not mistake me and think that I want to limit the size to pony size; I am not out for that, but we must have pony characters—the pony of the Welsh hills or his cousin from Exmoor, or the West Highland pony (with whom I regret I have no personal acquaintance), from which was built up the Highland Garron, "originally bred from small ponies crossed with large horses," as Munro Mackenzie states, and describes them as running up to 15 hands, strong enough to haul a ton load on a fair road, possessing the strength of a cart horse, with deep powerful shoul-

ders, and the low withers of the mountain pony, with good game heads and bold eyes, living and working hard.

But a pony must be a pony, not an undersized mongrel, or worse still, that monstrosity that is called a roadster. Working from a real pony sire one can get a first pony Clydesdale cross with form and size, a type that will carry a pony again, and still retain size enough for our purpose—the load on the road, or the plough under the trees. So shall we get endurance and activity, but I quite grant that while we are breeding our stock to suit the scale, we shall have to use other horses to keep going with; and again do not be led away by that horror, the roadster. Far better would it be to put a jackass on our mares, and get hardy mules, than to breed long-legged, slack-loined, loose-flanked misfits from our draught mares such as that class of horse will present us with. We must keep the bar sinister off our stud as we would debar it from our family. The size and substance of the roadster are a delusion and a snare. They will turn up in our stock as heavy tops and light underpinning with gravy-dish feet and every undesirable quality from a Hills point of view. We must use the blood horse, but the sire of heavy weight hunters, not the progenitor of the pot-hunting weed of the country course. With all the qualities of his line of descent, our horse must combine a massiveness that would make him slow on the turf and a weight of bone that would make a critic suspicious of his pedigree. In the words of the Hunters Improvement Society he must be bred with a special view to bone, substance, constitution, shape, and endurance.

Put such a horse on the type of mare we have selected, and misfits will be few. If they happen to be fillies keep them, for if lightness be their fault, we can rectify it by putting them to an active Clyde; and the gelding misfit will catch the eye of the man who cannot afford a motor, though too light for our work. We shall have heart and courage even if we have missed substance occasionally, and if the military buyer does not want them, though I rather think he will, the buggy or the sulky will bowl along merrily behind them. They are the type that in coaching days pricked their ears forward in the lead when the hill had to be breasted.

This line of breeding is the one above all others that will give us the general utility horse, and if the Hills districts would follow Professor Lowrie's advice and have horse breeding societies with such sires at command they would do away with much rubbish that it is hard to get £10 for at five year old. Co-operation in this respect would add £5 a head to every horse that is bred in the hills within five years—a fairly tidy sum to invest in the war loan if we figured it out.

With our present female stock, however, we are not quite ready to have our type fixed, and for a time we must fall back on the active

draught sire. Suffolk and Percheron are not obtainable, and we want the active clean-legged Clyde of the fifties of last century. We have that blood still, though bad cess to the fashion that feathered their legs. They are hard to find, but the Clyde men in the State still have them, though they do not figure in the show ring.

As with the mare, so with the stallion. The eye will give the keynote of the character, and for the hills he must be of a kindly disposition, for tearaways and nervous beasts are not wanted on moonless nights, or when a motor hoots like a lunatic bull just as the load wants steady-ing; and the sire transmits a big share of his own character to his stock.

He must be very masculine, for heart, courage, and determination are all wanted when a load of wood has to be shifted over a swampy paddock; and his hocks must be above suspicion, for soft, boggy hocks in a hills sire will turn up as bog spavins and thoroughpins in the offspring before they are ready for market, and once there the horse is not worth ~~anything~~ for hills work. So, when looking at the stallion, look for broad, flat, flinty hocks, and forgive him if he has not quite enough muscle on his rump.

NATURAL FORCES.

Thus, with our general utility horse, both sire and dam, we have established a theoretical type in our mind, and in heredity lies the problem of our success. Mating like with like, we hope to get animals with the same characteristics, and the certainty with which a definite pattern is reproduced is increased if numerous preceding generations experienced the same careful selection toward the same standard. The pony, the blood horse, and the Clyde have had this care bestowed upon them. If these principles were not true the production of a certain type would become the result of chance, so beware of "That-will-do" breeding; beware of sundowners in the form of "roadsters." Discriminating and persistent selection enable us to eliminate most of the chances for the offspring to resemble any but the one ideal type we desire. As a builder works to a plan, so must a constructive breeder breed to the type, and cull ruthlessly when the result is not right. We must eliminate chances, the hereditary force of desired characteristics must be intensified.

Interest your boy in the plan, he will carry it on when your good plough's rust and your bones are dust. Give him a good draught filly for his own, and when her foal comes to be handled he will think the farm the greatest place on earth, and a proud man will he be when he drives a team of his own rearing down towards the twinkling lights of Adelaide, and men turn round to look and say, "That's a ripping fine team; matched to a hair."

THE AGRICULTURAL BUREAU.

CONFERENCE AT CHERRY GARDENS.

Twenty-one years have passed since the first Conference of Hills Branches of the Agricultural Bureau was held at Cherry Gardens, and on Thursday, September 28th, the "coming of age" was celebrated in a manner worthy of the occasion. There was a large attendance of delegates and visitors, and throughout the proceedings, a keen interest was manifest.

Mr. C. Ricks, who was Hon. Secretary of the Branch at the time the first Conference was held, but is now Chairman, presided. He extended a welcome to the delegates and visitors, including the Minister of Agriculture (Hon. R. P. Blundell, M.P.), the Director of Agriculture (Professor A. J. Perkins), the Veterinary Lecturer (Mr. F. E. Place, B.V.Sc., M.R.C.V.S.), the Secretary to the Minister (Mr. W. L. Summers), Messrs. G. Jeffrey (Chairman), G. E. Laffer, M.P., and H. J. Finnis (Acting Secretary) of the Advisory Board.

The undermentioned delegates represented the Branches named:—Cherry Gardens, A. R. Stone (Hon. Secretary), H. Jacobs, H. Paddock, C. Lewis, J. Ferris, A. Broadbent, J. Tozer, S. W. Chapman, L. J. Lavington, D. Ricks, K. Jacobs, and H. Lewis; Clarendon, T. B. Brooks (Hon. Secretary), J. Piggott, J. Spencer, H. A. Spencer, D. R. Spencer, A. Phelps, and E. Dummill; Uraidla and Summertown, J. Morphet, F. Sharp, W. J. Blackwell, W. Squires, E. Hart, H. F. Johnson, and G. D. Blackwell; Longwood, J. R. Coles (Hon. Secretary), W. J. Davies, J. H. Brown, R. H. A. Lewis, J. C. Blakeley, and W. H. Hughes; Morphet Vale, A. F. Furniss (Hon. Secretary) and A. C. Pocock; Blackwood, A. A. Magarey (Hon. Secretary), T. C. Magarey, Geo. W. Summers, and J. Turner; Meadows, G. T. Griggs.

With evident pride the Chairman mentioned that the first two gatherings of the Hills Branches had been held at Cherry Gardens, and each year since delegates had met together somewhere in the Hills district. Of the local men there were present at the gathering that day Messrs. Joseph and Caleb Lewis and himself who had attended the first Conference. He claimed that the Branch throughout its career had been a live one, and if age meant wisdom, and youth enthusiasm, they combined both, for one member carried his 78 years, whilst their youngest was only 16.

PAST AND PRESENT.

The names of delegates present at the inaugural gathering were recalled:—Cherry Gardens, Messrs. C. Lewis (Chairman), J. Lewis, G. Brumby, W. Nicholle, T. Jacobs, H. Jacobs, G. Hicks, R. Gibbins, J. Mackereth, and C. Ricks (Hon. Secretary); Clarendon, Messrs. J. Wright (Chairman), A. Harper, W. Spencer, J. Spencer, J. Chapman, W. Steer, and A. L. Morphet (Hon. Secretary); Upper Sturt, Mr. G. Laffer (Chairman); Meadows, Mr. W. A. Sunman (Hon. Secretary);

Mylor, Messrs. J. Roebuck (Chairman), W. Nicholl, F. Wilson, E. J. Oinn, and P. Probert; Central Bureau, the General Secretary (Mr. A. Molineux) and the Inspector of Fruit (Mr. G. Quinn). It was interesting to note that no fewer than 12 of those delegates were still actively associated with the Bureau. These were:—Cherry Gardens, Messrs. J. and C. Lewis, T. Jacobs, G. Hicks, and C. Ricks (life members of the Bureau); Clarendon, Messrs. A. Harper and J. Spencer (life members) and A. L. Morphet; Longwood, Messrs. J. Roebuck and W. Nicholl (life members); Advisory Board, Mr. Laffer. The facts indicated cannot be regarded but as a striking indication not only of the value of the Bureau, but also to the fact that the producers recognise that the institution is worthy of their support.

MINISTER'S OPENING ADDRESS.

The Minister of Agriculture (Hon. R. P. Blundell), in a sympathetic address, valued highly the services rendered by the Agricultural Bureau, which had to be thanked for much of the State's progress. He then directed attention to the growing need for co-operative effort on the part of the producers, and briefly outlined what the Government intended to do in that respect. Probably the following week, he said, a Bill would be introduced to Parliament to enable financial help to be given to organizations of men on the land who were prepared to combine in the establishment of butter and bacon curing factories, fruit-drying, and other enterprises. It was necessary at the outset, however, for all concerned to realize that the success of the movement would depend to a large extent upon themselves, and he appealed to them strongly "not to lean against the Government post too much." (Laughter, and hear, hear.) Money would be advanced out of the general revenue in accordance with the amounts subscribed by the local producers, who would be expected to do their best collectively and individually to promote the welfare of the factory or business established. By the adoption of this policy it was confidently believed that the dairying and other industries affected would be materially developed, and the prosperity of the producers and of the State considerably expanded. There were many men in the different districts who would engage in dairying, pig-raising, and so on, as side lines to cereal and fruit production, if only suitable means for the disposal of their products were made available, and by effective co-operation those means could undoubtedly be readily obtained. Experience had demonstrated that the man who relied upon only one source of income was always liable to be caught by the adverse seasons which periodically were inevitable over the greater part of the State. In conclusion, the Minister said he would welcome any reasonable suggestions relating to the proposed innovation, and give them careful consideration. (Applause.)

The Chairman of the Advisory Board of Agriculture (Mr. G. Jeffrey), in moving a vote of thanks to Mr. Blundell, congratulated the Branch upon its fine record, and referred cordially to the efforts which were being made, with the approval and co-operation of the Government, for the organization of the fruitgrowing industry with

a view especially to the satisfactory disposal of the coming fruit crop. (Hear, hear.)

Mr. Laffer, M.P., seconded, and submitted that the practical interest displayed by the Government in connection with the development of the rural industries was most commendable. No industry had been hit harder by the war than the fruit industry, and he sincerely trusted that the orchardists would do all in their power to ensure a successful outcome to the scheme for the handling and distribution of the heavy crop in prospect. On account of the lack of shipping there probably would not be any export trade, and therefore everything possible would have to be done to encourage local consumption. To that end it was desired to organize the growers in the various centres, and secure the marketing of uniform produce which could be purchased by the public with every confidence. (Applause.)

The Minister of Agriculture, in acknowledging the compliment, which was heartily endorsed by the meeting, mentioned that, granting the Commonwealth authorities would make the necessary amendments to the Excise regulations, there was no reason why a large proportion of the unmarketable apples next year should not be converted into spirit, and thus give a fair return to the growers, instead of being wasted. (Hear, hear.)

BERSEEM.

Professor Perkins was then invited by the Chairman to "say something." Taking his cue from a fine cut of berseem that was on the platform, the Director explained that when he had first seen the plant growing in Egypt it had struck him as being an admirably suited winter growing fodder for South Australian conditions, especially for the irrigated areas of the Murray, where they had an abundance of summer feed, but were short in winter. It would be found to grow when practically every other crop refused to make headway, and provided a succession of heavy cuts of greenstuff. It was important to see that the seed was sown early, whilst the ground was still warm. It was necessary to cut the crop frequently.

FARM IMPROVEMENTS AND ATTRACTIONS.

Mr. J. Spencer, of the Clarendon Branch, contributed the following paper:—

The limit to such a subject is very wide, but every channel I do not intend to discuss. The first subject I will deal with is fences. The boundary fence and all fences must be constructed so as to resist the trespass of all cattle, preventing your own cattle from trespass on your neighbor's property and your neighbor's cattle from trespass on yours. Bad fences are a nuisance; bad fences make bad neighbors. The first sight of a farm with bad fences gives you a bad impression of the occupant—this of all improvements on the farm is the most important, without which you cannot prevent your own cattle from destroying your crops, and we who are favored to live in a district with abundance of timber available have little excuse to offer

if our properties are not substantially enclosed. The cheapest and best fence to erect for cattle is made from gum posts, preferably pink or blue, except in country infested with termites (white ants), where red gum cut from well matured trees would be preferable. The size of the posts should be 5ft. 6in. long and not less than 6in. x 8in.; strainers 7ft., and not less than 10in. at the small end. The endurance of a fence is much extended if the posts are split almost square. A post 9in. x 4in. contains equal measurement of timber to a post 6in. x 6in. The endurance of the latter is up to 50 per cent. longer than the former. With posts 20in. in the ground and 9ft. apart, the fence when erected will be 3ft. 8in. to the top wire, or 3ft. 10in. if a barb wire is placed on the top, which often prevents great cattle straining against the fence. The wires should be six, No. 6 gauge except the lowest wire, which may be smaller. The distance between the wires should be: top 8in., with lower 7in. All posts should be well fixed and wires efficiently strained. Abnormal prices prevent my advocating the fence which I otherwise would. Wire netting up to say £20 per mile, thoroughly affixed to a fence as above described, of six wires suitably gauged, is a cheap fence considering—First, that it is absolutely stock and vermin proof; second, that its durability is lifelong under usual conditions.

BUILDINGS.

The ideal spot for the house is not always available, but obtain the best possible. It should be facing the rising sun, on an elevation, to prevent drainage settling around the homestead. The house must be sufficiently large to accommodate the household comfortably, especially the kitchen and its surroundings. Erect all buildings for permanent use. They appear better, cost but a trifle more than slipshod buildings, their duration is lengthy, and they impart the comfort and convenience for which they were erected. Buildings should accord with the requirements. If working a farm of 500 acres or 25 acres it will pay you to arrange for the comfort and care of your stock and implements and give them good accommodation. I prefer a large roomy shed as a main building, in which may be fixed the chaffcutting plant. See that the chaff is delivered near the horses' heads for convenience of feeding. The spot selected for the stable should be sheltered from rough weather, and not exposed to excessive heat in summer—the very spot you would select to build a room to live in yourself if necessary. Having erected the building mentioned, it is comparatively easy and cheap to make further additions in the form of a lean-to to enable you to house conveniently the implements when not in use on the farm. Machinery depreciates oftentimes more by exposure to weather than by wear. On my way to the Hills Conference 12 months ago I passed a farm, and standing in the corner of the paddock were two binders, stripper, winnower, grasscutter, horse-rake, cultivator, and several ploughs without any shelter whatever, having been used the previous season and left there to be ready for the next. Apart from the extra expense of adjusting machinery standing exposed to all weathers the winter through, the practice makes the farm and farm life unattractive.

STOCK.

The horse is indispensable on the farm in the Hills, and its comfort and care is well worthy of first consideration, and its appearance and attractiveness when doing its work is most gratifying to its owner, and to get the best return from the horse requires forethought and preparation, so that when its best services are required they will be forthcoming. Let him be comfortable, have warm housing in winter and cool in summer, with a full supply of food.

On practically every holding of several acres in extent there are three other classes of stock—cows, pigs, and fowls, each class remunerative in itself, and more so when combined, if well housed, well fed, and cared for.

Cows are best stalled for feeding from good mangers, standing on impervious floors, either tied loosely by the neck or by the horns. One cannot then harm the other, and each cow partakes of the food given it. Make your cows' surroundings comfortable, for with contentment the cow yields in response its best.

Pigsties should be permanent buildings, such as provide comfort—warm in winter and cool in summer, having even impervious floors and good drainage. Construct the building in such a way that the pigs are able to get into the sunshine when they so desire. The cultivation of green fodder constitutes one of the chief improvements on the farm. I advocate berseem for winter feeding, lucerne for summer. There is nothing more attractive or more remunerative.

For the water supply in this district I advocate spring water for stock in preference to rain water. It is essential that ample be obtainable by the stock at all times as required. The deprivation of stock of water is equally injurious as deficiency of food, or even more so. Much pleasure can be derived from the ownership of superior stock and first class up to date implements, a clean well-ordered garden, especially in this favored district, where practically all fruits will grow for planting, and can be partaken of in their season, not forgetting the planting of trees for shade and shelter for stock. But in addition to all that can be seen as attractive to the farm is the policy that we talk it up and act up to it, giving our boys and girls a vested interest in the concern, if even only in a small way. I met a young man in a family of five sons, of about 20 years of age, who told me positively that during the previous 12 months he had received from his parents the sum of 2s. only as pocket money. In my opinion this young man was quite equal to the average workman who to-day is obtaining 8s. to 10s. per day. Can we make farm life attractive in this way? I say emphatically, "No," and although farming, especially in this district, is not conducive to a rapid accumulation of wealth, it can be made one of the most interesting, healthy, and attractive occupations of life if properly conducted. Let us maintain and retain the interest of our young men and keep them on the land.

OTHER OPINIONS.

The paper gave rise to an animated discussion. Mr. Henry Strange, of Cherry Gardens, urged the wisdom of giving the boys a reasonable return for their labor. He had worked on a farm in the old country, and had been paid not more than 2s. per week until he reached the

age of 21 years. He had made up his mind that nothing of the sort should happen to his boys in that country. Questioned by Mr. Blakeley, Mr. Spencer recommended the use of pink gum for fencing. Mr. J. R. Coles (Longwood) congratulated the writer of the paper, and referred to the necessity for erecting damp-proof houses. Mr. Pocock (Morphett Vale) mentioned the question of fodders. "Berseem is one of the best winter fodders we have," he said. However, as they got nearer to the sea coast, it was not wise to rely overmuch on clovers. He preferred a mixed sowing, including rye and barley. The season would favor one or other of the plants, and as a result a heavier cut would result on the average. The long drawn out working day made no appeal to him. "When the horses and implements are in proper condition, the work of the farm can be got through in eight hours," he said. Mr. Hughes raised the point as to whether it was not forced on them owing to the financial aspect, at times, to put up structures that were of a somewhat temporary nature, but Mr. Spencer adhered to his view that even if they put up only one building, it should be a permanent one. Mr. Phelps alighted on an important point when he expressed the hope that delegates would take the advice contained in the paper to heart, and that an improvement in their farms would result. He was much opposed to the practice of building into the side of a hill.

HORSES FOR THE HILLS.

After the luncheon adjournment the Veterinary Lecturer (Mr. F. E. Place, B.V.Sc., M.R.C.V.S.) addressed the gathering on "Breeding Horses for General Purposes." By way of illustrating his remarks the lecturer drew attention to the weak and good points of two local animals.

THE COST OF NEGLECT AND MAKESHIFT.

Mr. G. Blackwell (Uraidla and Summertown) dealt with this subject in the following paper:—"Everyone who wishes to get the best out of his horse, cow, or pig, knows that it pays to give it the best attention, to feed it well, and house it properly, and everyone who wishes to get the best out of his garden knows that to neglect to manure the ground or to prune his trees means a cutting down of profits, to say nothing of the ultimate decrease of value. There are many ways and channels through which one can see a leakage of pounds shillings and pence, which may not be going out in a very large amount at once, but nevertheless is finding a way out in a gradual process. Most men are careful about saving loss and extravagance in a great many directions, and yet there are some examples, at least, of indifference in this. The most glaring instance of this is that in regard to the care and upkeep of house property. Many houses have large cracks disfiguring the walls, and signs of damp showing on the exterior and interior of the walls. The most prevalent cause is the lack of proper means of taking away the water from the roof, and then away from the foundations. The walls are not the only sufferers, but the woodwork most likely has not had any paint for years, the timber becomes rotten, and something gives way, and the house is depreciated in value perhaps 25 or 50 per cent. Very often a house is handicapped right at the start through having been built too low, or with the ground falling towards instead

of away from it. The first fault is one of the best aids to the ravages of white ants, as it is an established fact that these pests object to working where there is light and plenty of ventilation. Hence every board floor should be kept up at least 12in. above the ground, and with sufficient ventilators to admit a current of air right through under the house. This is desirable also from a health standpoint, as there would never be that musty, damp smell in a room with these precautions. One would think that in a locality like this, where the rainfall is nearly the highest for the State, ample provision would be made to keep the wet out of our houses, and yet I have found several instances where, amongst other defects in roofing, the chimneys are utterly devoid of flashing, and all the water that strikes the chimney can flow down inside, and not only that, but the greater part of the water that comes down above the chimney finds its way inside also. I have endeavored to point out these cases where there is not only a leak of water, but the beginnings of financial leakage also, and still one can see other ways in which the policy of makeshift causes a continual loss, not only of energy and time, but consequently money. For instance, where there are duties that have to be done every day, such as the feeding of stock and watering of horses, &c., any method whereby time can be saved, be it ever so little (provided that in so doing the animals do not suffer), when that little is multiplied during months and years, the saving of time must be worth while. One man has had a horse for years, and always has to carry a bucket of water to it, another has a trough that he has to fill by hand every now and then. Supposing the initial cost of fixing a pump, or elevated tank, or other means of getting an automatic supply of water to a trough, were to run into pounds, the device would pay for itself in a very short time. Perhaps you are in the habit of going through an entrance where you have a pair of panels, and when driving have always to get down and undo and do up again. Perhaps as often or more than once a day. A gate fixed with a simple opening device should pay for itself in time, especially when, often owing to it being too much bother, the panels are left down, and straying stock get in and do damage that helps swell the losses. Such a job as greasing the wheels of vehicles calls for the cutting out of extra time and waste of energy. The usual form of getting the other fellow to lift the wheels whilst a prop is put under the axle, will not do, as this should be a one-handed job, and the other fellow should be doing something else. How simple to make a lifting jack with a chain to hold the strain, and the job can be done any time when one has a few minutes to spare. There are many ways in which the labor of loading such things as potatoes might be lightened when they are being transferred from the storing shed to van, or vice versa, by the fixing of a light pulley and tackle. The trouble is that at certain times of the year we are all very glad to save all these 'little longers,' as there is more to be done than there is daylight for. To cut out waste labor and to keep an eye on unnecessary losses means we will have more time for better work, and more profits; hence we may do well to always adhere to the principle of 'what is worth doing is worth doing well,' especially if it can be done well by the quickest means."

(To be continued.)

ANALYSES OF FERTILISERS.

The following are the results of analyses made by the Government Agricultural Analysts (Messrs. C. E. Chapman and W. T. Rowe), of samples of fertilisers taken by assistant inspectors under the Fertilisers Act since the beginning of the present year :—

Name of Firm and Fertiliser.	Phosphate.						Nitrogen.		Potash.	
	Water Soluble.			Citrate Soluble.			Acid Soluble.		Vendor's Guarantee.	Result of Analysis.
	Vendor's Guarantee.	Result of Analysis.	%	Vendor's Guarantee.	Result of Analysis.	%	Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.
Adelaide Chemical & Fertiliser Co., Ltd.—										
Bonedust	—	—	—	—	—	—	—	—	—	—
Bonedust	—	—	—	—	—	—	—	—	—	—
Bone super.	15.0	16.8	—	16.0	8.4	—	40.00	46.2	—	—
Garden manure (from E. B. Cox & Co.'s store) ..	16.0	15.1	—	16.0	16.2	—	40.00	47.5	—	—
Garden manure (from Wm. Charlack, Ltd., store) ..	16.0	21.4	—	16.0	12.8	—	4.0	3.9	—	—
Guano super.	27.0	28.2	—	3.0	2.4	—	4.0	6.6	—	—
Guano super.	27.0	28.6	—	3.0	2.4	—	3.0	2.3	—	—
Guano super.	27.0	26.7	—	3.0	3.5	—	3.0	5.2	—	—
Mineral super.	36.0	38.68	—	—	—	—	—	—	—	—
Mineral super.	36.0	38.9	—	—	—	—	—	—	—	—
Mineral super. (from Jas. Bell & Co.'s store, Wallaroo) ..	36.0	37.7	—	—	—	—	—	—	—	—
Mineral super.	36.0	38.6	—	—	—	—	—	—	—	—
Potato manure No. 1 (from E. B. Cox & Co.'s store) ..	20.0	24.4	—	10.0	8.7	—	5.0	2.5	1.5	1.62
S.A. super.	30.0	30.54	—	—	—	—	—	—	—	—
S.A. super.	30.0	31.1	—	—	—	—	—	—	—	—
S.A. super. (Jas. Bell & Co.'s store, Wallaroo) ..	30.0	31.3	—	—	—	—	—	—	—	—
S.A. super.	30.0	29.8	—	—	—	—	—	—	—	—
Super. B.	16.0	9.2	—	14.0	19.8	—	4.0	8.2	—	—
Thomas phosphate	—	—	—	20.0	27.7	—	15.0	9.8	—	—

Crompton & Son— Pure bonedust	—	—	—	42·67 27·0	44·8 26·4	3·8 4·0	3·8 5·3	—	—
Vineyard manure	—	—	—	—	—	—	—	—	—
Government Produce Department— Bonedust	—	—	—	40·0 23·5	53·1 40·2	4·0 5·75	3·5 5·34	—	—
Bone manure	—	—	—	—	—	—	—	—	—
Metropolitan Abattoirs Board— Blood manure	—	—	—	—	—	—	—	—	—
Bone manure No. 1	—	—	—	32·0 26·5	35·9 30·4	13·0 4·5 4·7	13·3 4·8 6·1	—	—
Bone manure No. 2	—	—	—	—	—	—	—	—	—
Wallaroo-Mt. Lyell Fertilisers, Ltd.— Adelaide super. (Y.P.)	30·0	33·82	—	—	—	—	—	—	—
Adelaide super. (Y.P.) (from Wallaroo)	30·0	33·9	—	—	—	—	—	—	—
Bone super. (from Wallaroo)	15·0	17·8	15·0	4·0	8·6	1·6	1·26	—	—
Bone and super.	23·0	28·3	7·0	8·0	9·2	1·4	1·4	—	—
Guano super.	27·0	30·2	3·0	3·0	2·4	—	—	—	—
L.I.G.E. (Lewis Island Guano Enricher)	28·5	29·2	4·5	5·0	6·8	·25	·27	—	—
Nitro. super. (from Silbert, Sharp, & Bishop's store)	15·0	11·1	15·0	4·0	6·0	1·6	1·4	—	—
Super. B	16·0	17·6	14·0	4·0	2·1	—	—	—	—
Wallaroo-Mt. Lyell standard super.	36·0	36·3	—	—	—	—	—	—	—
Wallaroo-Mt. Lyell standard super.	36·0	37·5	—	—	—	—	—	—	—
Wallaroo-Mt. Lyell standard super. (from Wallaroo)	36·0	37·6	—	—	—	—	—	—	—

Gao. Quinn, Inspector of Fertilisers, &c.

October 1st, 1917.

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, report on October 1st:—

BUTTER.—The surplus referred to last month has substantially increased, but with the eastern States continuing to purchase there has been no difficulty in placing all the butter made here. At the moment reply is being awaited from the Imperial Government to the offer made to sell Australia's surplus butter to them. Values have shown only slight fluctuations. At the close of the month "Alfa" selling at 1s. 2½d. per lb.; "Primus," 1s. 2d.; third-grade creamery, 11½d. to 1s.; choice separators and dairies, 11d. to 1s. 0½d.; fair quality, 10½d. to 11d.; store and collectors', 10d. to 10½d. per lb.

EGGS.—The quantities reaching the market show a big improvement on those of a year ago, with prices displaying a seasonable easing; hen selling at 7½d.; duck, 8½d. per dozen.

CHEESE.—New season's production is coming forward in larger quantities, but the active demand, both for local and export trade, keeps the market nicely cleared. Rates are unchanged, viz., 8½d. to 9½d. per lb. for large to loaf.

HONEY.—Good demand has existed throughout the month, but unfortunately supplies have been very short, prime clear extracted selling at 4d. to 4½d. per lb.; beeswax, 1s. 8d. per lb.

ALMONDS continue short of trade requirements, Brandis selling at 1s.; mixed softshells, 11½d.; hardshells, 7½d.; kernels, 1s. 10d. per lb.

BACON.—Although increased quantities have come to hand values are unaltered. Good demand continues for well-established factory brands; sides selling at 9½d. to 10d.; middles and hams, 10½d.; rolls, 9d. per lb.

LIVE POULTRY.—It is pleasing to report that brisk inquiry is being experienced for all birds fit to kill, and although large numbers have been received, values have well maintained. Heavy-weight table roosters fetched 3s. 6d. to 4s. 6d. each; nice-conditioned cockerels, 2s. 6d. to 3s. 6d.; plump hens, 2s. 3d. to 3s. 3d.; ducks, 2s. 4d. to 3s. 6d. each; geese, 4s. 6d. to 5s. 6d. each; pigeons, 7½d. each; turkeys, from 7d. to 9d. per lb. live weight for fair to good table birds.

POTATOES.—There has been a substantial reduction in the quantity of potatoes railed from the South-Eastern districts to the Adelaide market, and concurrently importations from Ballarat have increased. Prices during the month have slightly improved. **ONIONS.**—As we are now practically depending on imported onions the market price has moved up in sympathy with the very pronounced advance recorded in Victoria. **Quotations.**—Potatoes, £5 to £6 per ton on rails Adelaide or Port Adelaide; onions, £19 per ton on rails Adelaide or Port Adelaide.

THE AGRICULTURAL OUTLOOK.

REPORT FOR MONTH OF SEPTEMBER.

The following reports on the general agricultural condition and outlook of the areas represented by the Government Experimental farms mentioned below have been prepared by the respective managers:—

Booborowie.—Weather—The weather for this month has been similar to the rest of the winter, wet and cold. Crops are making very little headway, and in most cases contain a great deal of rubbish and weeds. Fine warm weather with light showers is badly needed. Natural feed is very backward and is being trimmed down by the rabbits. Stock is beginning to pick up in condition, many deaths have occurred amongst sheep, and milk fever has affected some cows. Pests—Rabbits are very numerous, especially on the large holdings; great difficulty is experienced in obtaining rabbits.

Eyre's Peninsula.—Weather—Cool showery weather with strong winds was experienced for the first three weeks, but the latter week has been fine and comparatively warm. A good rainfall has been recorded (28½ points) which is ½ in. above the average for the past three Septembers. One severe storm was experienced, and much damage was done by hail in the hundred north of Minnipa. Crops have grown well during the month, many of the early sown being well in ear. Loose smut is rather plentiful, and red rust is noticeable on some crops. Natural feed is very plentiful, cocksbur (*Centaurea tolstithalis*) and barley grass are becoming thick amongst the native grasses. Pests—The effects of rabbits have not been so noticeable this month, destructive measures meeting with good results. Miscellaneous—Clearing operations are in hand, but unfortunately only a comparatively small area is able to be tackled.

Kybybolite.—Weather—We have, like last month, registered just the average rainfall; distributed chiefly over the first and third weeks; the weather otherwise has been warm and pleasant. Crops—Results are now certain to be very poor; crops giving fair promise have generally deteriorated 50 per cent., and this, with the small areas under crop, will result in very small total returns from these districts. Natural feed is now making more growth and is very plentiful. Stock in good order. Miscellaneous—Fallowing is now possible, but frequent rains will be necessary, as the ground is setting very hard with the short spell of dry weather just experienced.

Turretfield.—Weather—Rain fell in 14 days in September and some fairly heavy falls were gauged, the total for the month being 383 points. There were many heavy dews, but only one frost was experienced. Crops are making rapid growth and barley is coming out in head. The dandelion is a prevalent weed. Natural feed is abundant. Stock—During the month stock has improved, both in appearance and condition. Pests—Rabbits are fairly prevalent. Miscellaneous—Shearing operations are becoming general, and there are indications of a good clip.

Veitch.—Weather—We have had 201 points of rain during this month, which is a little ahead of the average for the month, 194 points. Crops—Crops generally are making splendid headway, and the early sown fields are now well out in ear. With this month's rain there is now a chance for a satisfactory return from the late reseeded fields. Natural feed—Very good; the best seen in the district for some years. Stock—All in healthy condition. Pests—Rabbits are doing a good deal of damage to crops throughout the district. Miscellaneous—Scrub rolling and fallowing work are still in progress.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of September, 1917, also the average precipitation to the end of September, and the average annual rainfall.

Station.	For Sept., 1917.	To end Sept., 1917.	A'ge. to end Sept.	A'ge. Annual Rainfall	Station.	For Sept., 1917.	To end Sept., 1917.	A'ge. to end Sept.	A'ge. Annual Rainfall
FAR NORTH AND UPPER NORTH.					LOWER NORTH—continued.				
Oodnadatta	0.15	4.41	3.75	4.76	Spalding	3.75	23.67	15.52	20.25
Tarcoola	0.91	7.35	5.14	7.58	Gulnare	3.33	22.58	14.37	19.74
Hergott	0.79	5.29	4.48	6.04	Bundaleer W. Wks.	3.33	22.90	13.21	17.29
Farina	0.24	6.34	5.07	6.70	Yacka	3.21	29.02	12.14	15.27
Leigh's Creek ...	1.15	9.65	6.58	8.66	Koolunga	3.29	19.76	12.54	15.94
Beltana	0.91	10.28	6.95	9.22	Snowtown	3.75	19.75	16.22	15.70
Blinman	1.26	12.57	10.03	12.83	Brinkworth	3.40	20.70	13.04	15.48
Hookina	1.44	21.54	8.80	—	Blyth	4.86	22.15	13.17	16.34
Hawker	2.32	22.32	9.55	12.22	Clare	5.91	32.82	19.75	24.30
Wilson	2.16	17.77	9.21	11.78	Mintaro Central	5.42	36.12	18.10	21.99
Gordon	1.42	17.21	7.66	10.26	Watervale	4.80	36.92	22.11	27.17
Quorn	2.56	15.40	10.76	13.78	Auburn	4.50	32.23	18.86	24.25
Port Augusta	2.14	10.33	7.27	9.46	Hoyleton	3.05	20.37	14.16	17.96
Port Augusta W.	2.22	11.47	7.24	9.36	Balaklava	2.89	16.10	12.54	16.03
Bruce	1.73	13.05	7.49	10.01	Port Wakefield	2.14	15.08	10.72	13.13
Hammond	1.84	17.94	8.61	11.46	Terowie	2.39	17.04	10.26	13.71
Wilmington	2.76	20.12	14.43	18.26	Yarowie	2.71	18.77	10.77	13.91
Willowie	2.14	17.28	9.07	11.90	Hallett	2.61	17.51	12.67	16.40
Melrose	3.46	32.40	18.53	23.04	Mount Bryan	2.40	17.89	12.96	15.73
Booleroo Centre	2.28	19.18	12.15	15.83	Burra	3.66	19.78	14.33	17.82
Port Germein	2.39	13.48	9.88	12.84	Farrell's Flat	4.11	21.57	15.18	18.87
Wirrabara	3.26	27.60	16.31	18.91	WEST OF MURRAY RANGE.				
Appila	2.99	17.14	11.55	15.08	Manoora	4.01	24.62	14.41	18.09
Cradock	1.47	16.12	8.30	10.86	Saddleworth	3.26	22.69	15.80	19.69
Carrieton	1.88	19.22	9.35	12.22	Marrabel	2.85	21.25	15.41	18.94
Johnburg	1.68	15.55	7.66	10.21	Riverton	3.48	26.48	16.50	20.48
Eurelia	1.97	19.50	10.08	13.24	Tarlee	2.59	20.40	13.51	17.48
Orroroo	1.86	19.23	10.37	13.42	Stockport	3.05	20.08	12.83	15.89
Black Rock	2.05	18.39	9.36	12.25	Hamley Bridge	3.37	17.20	13.16	16.45
Petersburg	2.04	18.55	9.81	13.07	Kapunda	3.49	22.06	15.90	19.67
Yongala	2.66	20.69	10.72	13.94	Freeling	4.08	19.25	14.29	17.86
NORTH-EAST.					Greenock	4.47	24.37	19.25	21.46
Ucoila	1.44	15.03	—	—	Truro	4.15	25.43	16.09	19.74
Nackara	1.81	15.28	7.25	—	Stockwell	3.32	22.45	15.16	20.30
Yunta	1.29	15.12	6.28	8.22	Nuriootpa	3.43	21.82	16.98	21.25
Wankaringa	0.94	12.58	5.93	7.94	Angaston	3.98	26.02	18.03	22.25
Mannahill	1.09	11.02	6.03	8.46	Tanunda	4.22	23.78	18.09	22.28
Cockburn	0.61	11.09	5.86	7.97	Lyndoch	4.16	25.83	18.55	23.01
Broken Hill, NSW	0.83	13.10	7.26	9.63	Williamstown	5.07	—	—	—
LOWER NORTH.					ADELAIDE PLAINS.				
Port Pirie	2.56	14.91	10.47	13.21	Mallala	2.98	15.50	13.42	16.88
Port Broughton	2.88	14.36	13.54	14.33	Roseworthy	3.10	18.67	13.90	17.31
Bute	2.72	19.09	12.69	15.42	Gawler	2.95	20.74	15.50	19.21
Laura	3.14	21.30	14.45	18.22	Two Wells	2.59	13.21	13.06	16.36
Caltowie	2.33	18.95	13.26	17.27	Virginia	2.58	18.37	14.04	17.58
Jamestown	2.78	21.49	16.59	17.46	Smithfield	2.04	20.01	13.66	17.30
Gladstone	2.52	19.58	12.44	16.00	Salisbury	3.30	21.74	14.93	18.57
Crystal Brook	3.13	18.09	12.40	15.62	North Adelaide	4.42	29.63	18.53	21.49
Georgetown	3.48	23.37	14.49	18.32	Adelaide	3.68	24.63	17.22	21.04
Narriby	2.66	17.94	13.17	16.79	Brighton	5.68	34.68	17.24	—
Redhill	3.06	19.84	13.47	16.79	Glenelg	4.05	23.50	14.96	—
					Magill	4.65	32.94	20.83	19.93

RAINFALL—continued.

Station.	For Sept., 1917.	To end Sept., 1917.	Av'ge. to end Sept.	Av'ge. Annual Rainfall	Station.	For Sept., 1917.	To end Sept., 1917.	Av'ge. to end Sept.	Av'ge. Annual Rainfall
ADELAIDE PLAINS—continued.					WEST OF SPENCER'S GULF—continued.				
Glen Osmond ...	5.28	34.88	20.77	25.26	Port Elliston ...	2.48	21.94	13.99	16.49
Mitcham ...	4.49	29.00	19.34	23.47	Port Lincoln ...	3.73	23.95	14.85	19.88
Belair ...	5.54	—	23.55	28.64	Tumby Bay ...	3.56	16.21	12.73	15.00
MOUNT LOFTY RANGES.					Carrow ...	4.21	22.14	—	—
Teatree Gully ...	4.55	36.14	22.61	28.19	Cowell ...	2.73	11.05	9.30	11.76
Stirling West ...	8.94	64.29	38.57	46.70	Point Lowly ...	2.25	11.45	9.01	12.21
Uradda ...	7.06	61.28	36.93	44.35	Cummins ...	3.49	—	—	—
Clarendon ...	6.90	38.37	27.49	33.67	Arno Bay ...	2.99	—	—	—
Morphett Vale ...	5.29	27.25	17.67	23.32	YORK'S PENINSULA.				
Noarlunga ...	5.11	25.82	16.61	20.28	Wallaroo ...	2.43	14.80	11.62	14.05
Willunga ...	5.74	31.33	21.40	25.98	Kadina ...	2.98	19.39	12.17	15.88
Aldinga ...	5.71	26.26	16.59	20.34	Moonta ...	3.01	18.05	12.95	15.22
Normanville ...	4.48	24.14	17.20	20.65	Green's Plains ...	2.98	17.98	12.94	15.73
Yankalilla ...	6.07	29.12	31.50	22.78	Maitland ...	4.81	25.58	16.66	20.08
Cape Jervis ...	—	—	13.52	16.34	Ardrossan ...	2.96	14.54	11.37	13.89
Mount Pleasant ...	5.74	36.38	22.17	26.87	Port Victoria ...	3.64	19.61	12.63	15.21
Blumberg ...	5.61	40.82	24.10	29.38	Curramulka ...	3.00	20.21	15.25	18.50
Gumeracha ...	5.79	45.16	26.66	33.30	Minlaton ...	4.39	24.25	14.69	17.41
Lobethal ...	7.33	41.27	29.31	35.38	Stansbury ...	4.73	24.52	14.09	17.06
Woodside ...	7.01	41.06	26.32	31.87	Warooka ...	4.36	24.92	14.92	17.71
Hahndorf ...	7.46	42.86	28.68	35.45	Yorketown ...	4.49	22.65	14.37	17.47
Nairne ...	6.18	36.20	23.45	28.83	Edithburgh ...	3.77	21.69	13.67	16.48
Mount Barker ...	6.72	44.02	25.49	30.93	SOUTH AND SOUTH-EAST.				
Echunga ...	7.17	42.94	27.07	32.83	Cape Borda ...	3.95	25.72	21.63	25.09
Macclesfield ...	5.90	36.21	25.04	30.72	Kingscote ...	4.50	22.60	15.87	18.95
Meadows ...	8.09	49.47	29.27	35.52	Penneshaw ...	3.73	19.76	18.05	21.34
Strathalbyn ...	4.10	20.52	15.75	19.28	Cape Willoughby ...	—	—	16.29	19.69
Myponga ...	6.48	—	—	—	Victor Harbor ...	3.32	22.36	17.87	22.18
Millbrook Reserv.	5.46	—	—	—	Port Elliot ...	3.14	21.27	16.47	20.33
MURRAY FLATS AND VALLEY.					Goolwa ...	3.05	20.09	13.64	17.93
Wellington ...	2.30	14.20	11.74	15.01	Pinnaroo ...	2.21	14.54	12.07	16.74
Milang ...	2.19	13.15	12.70	16.08	Parilla ...	1.41	13.90	—	—
Langhorne's Brdg	2.45	—	—	15.27	Lameroo ...	2.13	15.02	12.73	16.55
Tailem Bend ...	2.47	15.39	11.36	—	Parrakie ...	1.69	14.06	11.21	—
Murray Bridge ...	2.29	11.70	11.15	14.32	Geranium ...	2.30	17.13	11.72	—
Callington ...	3.27	15.75	12.56	15.65	Peake ...	2.16	17.00	12.87	—
Mannum ...	1.75	9.53	9.30	11.67	Cooke's Plains ...	2.84	17.42	11.75	14.74
Palmer ...	2.72	16.71	11.66	15.60	Meningie ...	3.34	20.63	—	—
Sedan ...	2.35	12.87	9.69	11.92	Coomandook ...	3.11	20.43	13.88	16.80
Blanchetown ...	1.20	4.78	8.00	—	Coonalpyn ...	3.25	20.59	13.89	17.49
Endunda ...	2.75	16.54	13.96	17.33	Tintinara ...	3.50	20.41	14.59	18.78
Sutherland ...	1.64	8.81	8.36	10.71	Keith ...	3.46	19.88	14.55	—
Morgan ...	1.63	6.98	6.83	10.60	Bordertown ...	2.92	21.07	15.24	19.76
Overland Corner	1.79	9.36	8.39	—	Wolsley ...	3.31	20.42	13.93	17.72
Renmark ...	1.79	12.60	7.89	11.42	Frances ...	2.61	18.85	15.57	20.74
Loxton ...	1.77	13.89	8.38	10.93	Naracoorte ...	3.43	23.24	17.97	22.60
Swan Reach ...	1.27	—	—	—	Penola ...	4.34	27.55	20.15	26.78
Waikerie ...	1.85	—	—	—	Lucindale ...	3.67	24.14	18.65	23.32
WEST OF SPENCER'S GULF.					Kingston ...	3.80	27.30	20.30	24.73
Eucla ...	0.88	9.54	8.21	10.13	Robe ...	4.08	25.40	20.70	24.69
White Well ...	0.68	10.07	7.11	9.67	Beachport ...	3.57	26.20	23.08	27.51
Fowler's Bay ...	2.47	15.35	10.35	12.11	Millicent ...	4.87	28.92	24.41	29.25
Penong ...	2.69	14.98	9.54	11.93	Mount Gambier	4.96	28.53	25.64	32.00
Murat Bay ...	1.69	13.32	8.45	—	C. Nrthumberland	—	—	32.60	26.63
Smoky Bay ...	1.73	12.69	—	—	Kalangadoo ...	5.26	—	—	—
Streaky Bay ...	2.15	18.74	13.07	15.31					

AGRICULTURAL BUREAU REPORTS.

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Carrieton	*	—	—	Ki Ki	*	—	—
Carrow	*	—	—	Kingscote	*	—	—
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Mount Compass	*	—	—	Spalding	*	—	—
Mount Gambier	*	—	—	Stockport	*	—	—
Mount Hope	*	—	—	Strathalbyn	*	23	27
Mount Pleasant	*	—	—	Sutherland	*	—	—
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Port Elliot	*	20	17	Yorke town	*	—	—

* No report received during the month of September.

† Formal report only received.

‡ Held over until next month.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERSBURG AND NORTHWARD)

AMYTON (Average annual rainfall, 11.82in.).

August 28th.—Present: 14 members and 12 visitors.

HOW TO MANAGE A FARM OF 600 ACRES.—In a paper on this subject, Mr. Foulis said that carefulness was the first essential for good farm management. Up-to-date machinery should be selected, and well looked after when working in the field. When an implement had finished work for the season it should be carefully overhauled and the necessary repairs effected, and then kept under cover until next season. The horses should have good attention and plenty of feed and water. It was better to allow the horses freedom at night than keeping them shut up in the stable. Every farmer should have a chaffcutter, as that was needed to feed the horses and stock economically. Two foals at least should be reared every year to keep up the supply of horses. The foals should be allowed to run with the mother as long as possible, and when weaning it was essential that they should have good feed. A farm, to be worked on the best lines, should produce its own hay, wheat, oats, mutton, milk, etc., poultry, and vegetables. Seeding should be commenced about April, using 30lbs. to 50lbs. of super. and 1bush. of wheat to the acre, and only the best and cleanest of seed wheat used. He gave preference to Yandilla King and Federation for grain wheats, and King's Early for hay. When sowing clean dry fallow he did not think it advisable to pickle the wheat, as that tended to stunt the growth of the wheat, and also took more rain to bring it forward. Stubble land should be cultivated lightly, and not sown until rain had fallen. Early fallowing gave best results, and if commenced about June most of the rubbish would be killed, and the horses able to have a spell before harvest. When working the fallow a cultivator and harrows should be used. A small flock of sheep would supply the meat for the homestead, and would also add profit if well looked after. Poultry, cows, and pigs in numbers that could be easily handled were also necessary on a well-managed farm.

TABCOWIE (Average annual rainfall, about 15½in.).

Present: 14 members and one visitor.

BEST METHOD OF KILLING RABBITS DURING SEPTEMBER.—Mr. T. Ninnes contributed a paper on this subject. He said the first thing to consider was the nature of the country in which one had to deal with the rabbits. He had obtained excellent results from the use of the plough and phosphorus mixed with pollard baits. He preferred the use of the plough on account of the much better furrow that it made, and also because the rabbits were more likely to follow it up. The baits should be placed in the furrow about three or four yards apart. He favored the use of bran, because any baits not picked up by the rabbits would go to pieces when the first rain fell on them. Care should be taken to see that all stock were removed from the paddock before commencing poisoning. Where the country was rocky he advised the use of the fumigator with bisulphide of carbon. Should the

burrows fail to hold the fumes on account of the crevices and cracks the other method was to net the burrows and starve the rabbits out. He had had good results from phosphorus poisoning, even when there had been an abundance of green feed.

TARCOWIE (Average annual rainfall, about 15½ in.).

August 7th.—Present: 13 members and five visitors.

Mr. C. A. Kotz delivered an address on the principles of two years fallowing, in which he advocated fallowing land and allowing it to lie idle for two years before it was sown. The address was discussed by members, who were of the opinion that the principle would not pay on account of the land being idle too long.

WARCOWIE (Average annual rainfall, 12.16 in.).

July 28th.—Present: 10 members.

FALLOWING.—Messrs. J. Ryan and A. G. Telfer contributed papers on "Fallowing." They said fallowing was done with the following objects in view:—(1) To work the soil into a good physical condition for the growth of the wheat plant; (2) for the destruction of weeds; (3) to conserve moisture; and (4) the preparation of as large an area as possible so that the seed could be drilled in quickly. The best physical condition for the growth of the wheat plant was a fine loose surface soil of about 2 in. over a solid but not hard second layer, or subsoil which would encourage the rapid growth of roots. They were of the opinion that farmers were sometimes apt to overlook the importance of that question. If the land to be fallowed was of a heavy character, it should be ploughed thoroughly and then worked with the cultivator and harrowed. If the land was hard and the plough did not make a good job, it would be necessary to see that subsequent cultivation was deep enough to break up and consolidate the under portion of the broken soil. It would sometimes save trouble in that way if land was lightly cultivated before being ploughed; then it would not break up so rough, and the loose soil on the surface that had been stirred with the cultivator would be turned down to the bottom of the furrow. If the land to be fallowed was of a light nature, the desired result could be obtained by the use of a good cultivator. It would be found that if a cultivator could be put into the soil, in order to work it to the required depth, the cost of working would be reduced by one-third, as the same team could work 300 acres with the cultivator in the same time that it could fallow 200 acres with the plough. In considering the question of destroying weeds, it was well to bear in mind the fact that they were more easily killed before they came out of the ground than when they were in seed. The conservation of moisture was a matter of vital importance in that locality, as in almost every season there was at least one period during the growth of the crop at which the rainfall was not sufficient to keep the plants at their best. That would mean that a crop that had not a reserve of moisture in the subsoil that had been stored in the process of fallowing would receive a check during the dry period, with the result that while one crop on well worked land would stand the dry spell and yield a payable return, another crop on land of equal quality but not so well treated would fail. In order to conserve a maximum amount of moisture in the soil the surface should be kept loose, and that could be done by harrowing the land after each fall of rain. It was also important to see that the harrows were heavy enough to thoroughly break up the soil to a depth of at least 2 in., as anything less would not be effective. If the land was in that condition at seeding time the crop could be put in without any delay. The best time for fallowing was during the winter and early spring. But if the teams were idle at any other time, ploughing could be done with advantage. For instance, if it was convenient to work a piece of land for fallow between harvest and seeding it would be in better condition to receive any rain that fell during seeding time, the weeds would start better, and the subsequent working would be easier. Moreover, the same team would easily plough two or three acres per day more in February than in July. The election of officers for the coming year also took place.

At a meeting held on August 25th Mr. T. Donnellan read a paper on "Wool *versus* Wheat Growing." In discussing the paper Mr. G. Grovesden said that at present land values he did not think it would pay to give up wheat growing altogether, as sheep alone would not pay interest on capital outlay and working expenses. The great obstacle in turning those areas back into sheep runs was the value of the improvements that the farmer had put on his land. Messrs. Feineler and Ryan also discussed the paper. Mr. J. Feineler also submitted a paper on "Improving the Bureau." He said that to make the Branch a success it was very necessary to have a live secretary, as a great deal depended upon his work. A good discussion followed.

WEPOWIE (Average annual rainfall, 13in. to 14in.).

September 1st.—Present: 15 members and two visitors.

FALLOWING.—In a short paper on this subject Mr. F. Churcher said that land intended for fallowing should be burnt off early in February, and ploughing commenced when seeding operations were completed. The objects of fallowing were the conservation of moisture, the destruction of weeds, and the production of a good seed bed. He gave preference to the five-furrow stump jump plough, and recommended ploughing to a depth of 4in. The main point was to see that the ground was cut and turned over, it could then be left four or five weeks to sweeten, and then worked with the harrows. That consolidated the surface, and kept the land in a loose condition. Keeping sheep on the fallow would kill a large number of weeds that had been missed by the implements. He had found it a good plan to plough straw into hard red land, as when the straw rotted it made the land loose. Seeding would be done more easily if the fallow was kept clean, and would also be less strain on the horses. In turning back the fallow it should be cultivated to the same depth as it had been ploughed, and the last working should be done at seeding time deep enough to insure the killing of all the weeds. One point that should be borne in mind was that the mouldboards of the plough should be kept clean, that would help to turn the land over better.

WILMINGTON (Average annual rainfall, 18.26in.).

September 5th.—Present: 11 members.

WAGES.—Mr. J. J. Modystach read a paper dealing with this question, and said it would be an advantage to all concerned were every farm hand paid by the hour in place of weekly wages. In the discussion Messrs. Goodenough, Hannagan, and Stephens disagreed with the paper, and favored a weekly pay system on farms. Others agreed with the writer of the paper. The weather conditions during harvest time were also a factor which should be considered when farm hand wages were discussed.

WILLOWIE (Average annual rainfall, 11.90in.).

August 3rd.—Present: Nine members.

Mr. F. Bull read a paper on "Agents and Commissions." At a subsequent meeting held on August 31st Mr. S. G. McCallum delivered a short address on "Firewood Supplies," and said that more care should be taken of our timber supplies. Trees should be planted on every farm in order that they could be used for firewood. Mr. J. H. Schmidt did not think it would pay to grow trees only for firewood—they should also be grown to provide shelter for stock.

COOMOOROO, September 1st.—Mr. N. S. Lillierap gave an address on "Stock on the Farm," in the course of which he stated that it was always advisable to keep good animals, as when not required on the farm they would command a good price. A discussion followed on the cheapest method of fencing.

HOOKINA, August 28th.—Mr. J. J. Henschke initiated a discussion on wool classing. He advised shearing dry sheep first, leaving the ewes and lambs till last. Belly wool from ewes and wethers could be classed together, but care should be taken to remove wet parts from wether wool. Mr. B. Sheridan asked the best method of classing a small flock, and members thought that it did not pay to make too many separate lots. Mr. G. Henschke said he would keep greasy and sandy fleeces to themselves.

MIDDLE-NORTH DISTRICT.

(PETERSBURG TO FARRELL'S FLAT.)

BEETALOO VALLEY (Average annual rainfall, 18in. to 19in.).

August 27th.—Present: 10 members and one visitor.

DAIRYING.—In a short paper with this heading Mr. D. G. Boehm said the most suitable cows for dairying in that district were the Shorthorn, Ayrshire, and Holstein breeds. Feed was inclined to be scarce in that district, so that if a cow produced 8lbs. to 10lbs. of butter per week she was paying her way. Should the above breeds not turn out good milkers they could be fattened and sold to the butcher. Members in discussing the paper did not agree with the speaker's views in regard to the class of cattle to be kept. The majority of members favored the Jersey Shorthorn cross, being good milk producers, with a butter average of 12lbs. per week, but considered that supplies of proper feed were necessary. One member had obtained good results by giving a gallon of oats twice a day in the chaff.

BLYTH (Average annual rainfall, 16.46in.).

June 30th.—Present: 15 members and three visitors.

DEALING WITH THE LABOR DIFFICULTY ON THE FARM.—In the course of his remarks in a paper on this subject Mr. J. S. McEwin said the war had made a heavy drain on the men who were previously working on farms. Progress had already been made with regard to the introduction of larger machinery, and in that direction the solution to the labor difficulty seemed to lay. During last harvest numerous small implements were set aside and larger machines purchased. A few years ago a 6ft. harvester was considered too cumbersome to be easily worked, but last year machines 10ft. 6in. in width had successfully reaped badly tangled crops which could not otherwise have been harvested. Even with the shortage of labor farmers had been able to cope with a heavy harvest. Practically the same facts could be applied in regard to the strides that had been made by the drill manufacturers, enabling farmers to sow larger areas of land in a limited period of fine weather. Mr. W. O. Eime thought the combined drill and cultivator was a great time and labor saver. Mr. A. L. McEwin said that if the ground was worked at the right time and up-to-date machinery used, labor would be saved.

At a further meeting held on July 28th the Hon. Secretary (Mr. F. Wiltshire) read the annual report, and the Treasurer presented the balance-sheet. The election of officers also took place.

At a meeting held on September 1st Mr. W. Hutchens read a paper on "Dairying on the Farm." He said that milking cows should be fed twice a day on bran and chaff, with crushed or soaked oats added, for about eight months of the year—say from December until the end of July. By that time there should be sufficient green feed for the cows. If one wanted to keep the cows in milk for a good period it was necessary that the animals should be milked at regular intervals. He thought a cow should calve in April, as at that time one could obtain the best prices for her produce, and she would also be able to have good strong green feed later on. After being in milk for 10½ months she could go out for about six weeks and then be brought in again. If a cow was well cared for and that procedure followed she could be kept going for a number of years. The calf should have its mother's milk for a few days, and then for about six months be fed from the bucket, which should always be kept clean. He thought that if the milk had the chill taken off it when fed to the calf much would be done to prevent scouring. He favored a heifer being brought in at two years old. He was a firm believer in the practice of feeding the cows whilst they were being milked. The cows should have a change of paddocks as often as possible, and when being brought in to be milked should not be worried by a dog or driven quickly. He preferred crossbred cows, as in most cases they seemed stronger and better able to withstand bad weather.

BOOLEROO CENTRE (Average annual rainfall, 15.83in.).

August 3rd.—Present: nine members and one visitor.

THE PROGRESS OF AGRICULTURE.—In a paper dealing with this subject the Hon. Secretary (Mr. G. Ashby) said that wonderful strides had been made in all branches of agriculture since the early ages. In speaking of agriculture in South Australia he said that when the country was first opened up farming was followed in a primitive style, such as sowing with the hand, reaping with the sickle, thrashing with the flail and other ways, but the introduction of machinery had been a great blessing to the primary producer; also the introduction of artificial manures, the drill, the binder, and the reaper-thresher. The labor in agriculture had been greatly lightened, and the cost curtailed by means of improved implements and machinery. The railways by which the country was now served in all directions had proved of great service to farmers by conveying their produce to markets quickly and by making superphosphates and other manures available to the occupiers of many inland and remote districts. Increased attention had also been successfully given to the improvement of our crops. Improved varieties obtained by cross fertilization, either naturally or artificially brought about, had been carefully propagated or reproduced, and generally adopted. Agricultural knowledge had also been increased, and that to a large extent had been done through the Agricultural Bureau. The *Journal* was the means of collecting statistical and general knowledge or information connected with agriculture, and by its publications had made known the practices of the best farmed districts and in many instances these methods had been adopted with success. Considering the history of agriculture since those areas had been opened up it was pleasing to note the growing intelligence which had been manifested by farmers in the prosecution of their calling. The Hon. Secretary (Mr. G. Ashby) also read the annual report.

BOOLEROO CENTRE (Average annual rainfall, 15.83in.).

August 31st.—Present: eight members and two visitors.

FALLOWING AND WORKING THE LAND.—In the course of a paper on this subject Mr. Sanders said that if one wished to obtain the best results in growing wheat the land must be worked thoroughly. Fallowing should be commenced at the end of June, as by that time the first crop of weeds was generally well started, and the second crop would have had time to germinate so that one would be able to destroy them during spring cultivation. The depth of ploughing depended largely on the nature of the soil. On hard, red land a depth of 5in. would be sufficient, but on loose ground one should not plough so deep. After fallowing it was advisable to run the harrows over the ground. He preferred the section cultivator, as that did not leave the ground too level. If rain should fall during summer or autumn the land should again be worked with the harrows or a wide spring tooth cultivator, which was an excellent implement for the purpose. With it one would be able to cultivate about 20 acres per day. It was also very light in draught, and left the ground in nice order for the drill.

BUNDALEER SPRINGS.

September 3rd.—Present: seven members.

PIG-RAISING.—In a paper under this heading Mr. P. Kerin said that the sty should be built on rising ground, with a good slope to the east. It should be built of stone, with a straw roof, and divided into two compartments, each large enough to house a sow and litter. A pig yard of half an acre adjoining the sty was desirable in order that the animals might have exercise. He preferred Berkshires or Middle York pigs, as they grew faster till about six months old, and needed less feed to keep them fat. For bacon he favored a crossbred, viz.:—Tamworth or Poland China sow with a Berkshire boar. The latter should be pure bred, and have all the desirable characteristics of his breed. He should not be used till nine or 10 months old. The sow should be a good feeder, and roomy in body, with 12 or 14 good teats evenly spaced. She should not be mated with the boar till 12 months old, and not too fat at the time. Lucerne or clover pastures supplemented with sufficient grain were conducive to large healthy litters. Wheat, barley, oats,

and peas should be crushed before reeding to pigs, or soaked, but should not be boiled. After farrowing the sow should have no feed for the first day, and light feed for the next few days. As soon as young pigs could eat they should be given milk with a little pollard in a shallow trough, and have a dry sty to sleep in, with plenty of clean straw, after they were weaned, which should be at nine or 10 weeks old. In the discussion which followed, Mr. O'Dea thought that milk and crushed grain made excellent bacon. He preferred crossbred sows for profitable litters. Crushed soft food would bring a young pig on more quickly than green feed. In reply to questions, Mr. Kerin said he would not keep a sow that produced less than 10 pigs in a litter. Twelve was a fair thing, in his opinion.

CRYSTAL BROOK (Average annual rainfall, 15.62in.).

September 1st.—Present: 31 members.

WOOL-CLASSING.—Mr. H. K. Drinan contributed a paper on this question. He said wool was classed to enable manufacturers of various wool products to purchase the particular kind of wools required at their factory; it also enabled the buyers to ascertain the correct value of the wool under offer. As an illustration he pointed out that a buyer when examining a bale of wool would possibly find on the top good, bright fleeces, fairly free from seeds and dirt, and would value the bale at 50 per cent. pure wool, but on examining the bale further might come across a fleece short in staple, poor in color, and lean of staple, that would alter the valuation to about 35 per cent. wool, the buyer's argument being that there were possibly more fleeces of a like nature in the bale. The counts or spinning qualities were taken from the character of the wool fibre; those mostly used by the manufacturer ranged from 70s to 36s, which meant wool from the fine Merino down to the coarse Lincoln. The counts were divided into three sections—70s to 58s, fine to strong Merino; 56s to 44s, fine Crossbred, half, and three-quarter bred; 40s to 36s, Lincoln. Those counts were used when classing comebacks or Crossbred sheep. The character of the wool fibre played an important part in classing wool on a sheep station, where the usual number of classes could be made, but with farmers as few lines as possible should be made. The term "star lots" was applied to a line of one class under three bales. In wool-classing there were numerous items that had to be closely watched, such as thickness of fibre, color, condition, and quality of staple. The classer should not make the lines too high. A good plan was to have about 12 to 20 fleeces on hand, as that would give a good idea of the number of classes one would be able to make. He suggested that one should make three lines of fleeces, one of pieces, and one bellies and stained pieces. The stained pieces would contain skirts from A pieces, second bellies, and all stained wool, also one line of locks. Fleece wool could be divided in three classes, under the following trade terms:—AA, A, and C. The first line, AA, would consist of the longest, brightest, broadest, and most attractive in staple, quality, condition, and color. The next line, A, medium in length, lean of staple, and heavier in condition. The third line, C, would be the cast line, in which would be placed all heavy, dingy, stringy, poor color, tender in staple, coarse in quality, seedy, fatty, and earthy fleeces. He pointed out how necessary it was to keep out all strong quality wool from the AA and A lines, as some manufacturers only used a fine quality wool. Great care should also be taken to see that no string ends were mixed in any way with the pieces and locks. A pieces would contain light and bright skirts of fleeces free from stain, and it was important that every line should be free from stained wool. The bellies should be skirted lightly, and the stain and sweat edges removed. Stained pieces would consist of all stained wool and skirtings from A pieces and bellies. Locks would be made from second cuts and the sweepings from the board and wool floor. Black wool should not be skirted, but bagged when shorn, care being taken not to get it mixed with white wool. Lambs' and rams' wool should each be made into a separate class, from which all stained pieces had been removed. If summer lambs' wool was of sufficient length it could be classed with the fleeces. In the majority of farmers' flocks ewes, wethers, and hoggets were treated as one class. Crossbred wool should be sorted in a class by itself. The front of each bale should be branded with the name of the owner, class of wool, name of town, and the number when three or four classes of wool were placed in one bale, which often occurred towards the end of shearing. They could be branded in

the usual way with the exception that each class should have a division placed between it and a line drawn across the outside of the bale. In all cases the bales should be filled.

GLADSTONE (Average annual rainfall, 16in.).

September 1st.—Present: 10 members.

SEED AND WEED CONTROL.—The Botanical Assistant and Quarantine Officer for Plants (Mr. H. W. Andrew) contributed a paper on this subject, which was read by the Hon. Secretary (Mr. F. T. Reynolds). He said: "Few people realise what the farmer and gardener, and the State in general, lose as a result of the establishment and spread of weeds. It is partly because weeds are so common and familiar to us that they are so frequently suffered to run riot over the land with little or no check. In this respect many weeds may be compared to certain insidious diseases (such as consumption or tuberculosis) which are often allowed to creep on the individual owing to the fact that in the early stages they usually have quite a common and innocent aspect. The word weed is defined in some dictionaries as 'A plant such as grows where it is not wanted.' For practical purposes of the agriculturist therefore any plant growing out of its place is a weed, even though in its proper place it may be a useful plant. Thus chicory is cultivated in the South-East for the sake of its root, which undergoes certain treatment and is used for mixing with coffee, but growing amongst other crops, where it is not desired, may be a bad weed. No one knows better, perhaps, than the practical farmer the extent of the losses caused by weeds in general, but it may be well to call to mind here some of these losses—(1) They rob the crops and pasture of food, light, and moisture. It has been estimated that an acre of cabbage plants will give off 440,000 galls. of water in four months; hence enormous quantities of moisture are transpired from the leaves of plants, and lost to the farmer and grazier, to the detriment of his fallows, &c., quite apart from the mineral and other foods absorbed in solution by the roots of weeds. (2) They tend to smother crops and the more valuable acclimatized and native fodders, and thus take up space that should be occupied otherwise. (3) Some parasitic weeds, such as dodder and broom rape absolutely kill other plants, while some semi-parasites like *Bartsia* and *Euphrasia* shorten the life of grasses on which they partly live. (4) The presence of a few poisonous weeds, such as the Cape tulip, as found in otherwise rich grazing paddocks in certain parts of the Mount Lofty Ranges and elsewhere detract from the value of the land. Likewise burrs, bristles, and pappus hairs from certain plants are responsible for dirty wool, the formation of 'hair balls' in stock, &c. (5) Tillage operations are rendered difficult, and cannot always be done properly and thoroughly, whilst harvesting of seed and hay is likewise hindered. Not only is less money received from the sale of dirty seed or chaff, but the purchaser of impure seed in the shape of inferior 'poultry wheat,' or chaff suffers, and afterwards, may be, his neighbors. Many weeds harbor crop pests like the finger and toe disease in the turnip family, ergots on rye grasses. The millions of lucerne fleas to be found in burr clover in some seasons show how this weed harbors a prolific insect pest. By some authorities it is also stated the roots of weeds give off a poisonous substance, which affect neighboring plants—it is certain that some crops suffer from the growth of weeds, even though there be plenty of moisture, light, &c., for both weeds and crop. The subject of impure seed, particularly the necessity for seed control, is occupying attention now throughout the Commonwealth under Federal Quarantine and Commerce Acts. The following paragraph, written by the Seed Commissioner for Canada, before the present war, is rather to the point. He said, 'Germany took the lead in establishing seed-testing and control stations nearly 50 years ago. Largely as a result of the work done at these stations the retail markets of Germany became gradually closed to inferior seeds, while the demand for stock of superior quality from other countries increased, as did the exports of inferior seeds. With Germany taking the cream of the supply from Europe, and exporting her low-grade seed, other countries were ultimately compelled in self-defence to devise similar systems of seed control for the protection of agriculture.' What has taken place in the older countries of the world is pretty sure to happen here. In Victoria and Queensland all seed sold must reach a standard of purity—or freedom from weed seeds—and a standard of germination both fixed by regulations. This means that seedsmen and others selling seeds to any

farmer are liable to prosecution if the goods fall short of these requirements. Indirectly it also means that there will probably result a marked improvement in the quality of seeds sold to the producers in those States, while the other States not having similar legislation may become dumping grounds for inferior seeds, which are not allowed to be sold where produced. Before dealing with the work done in controlling the entry and distribution of weeds, I wish to draw your attention to a point which is not generally realised, and that is some 400 odd introduced plants have established themselves more or less in this State since its foundation, and these include practically all the weeds found here. Only about one dozen weeds of trouble to the primary producers are native—some native dodders and mistletoes, the prickly or three-cornered jack, nut grass, several burrs, &c. During the year ended June last seeds of at least 50 of the 400 odd plants already found in this State were discovered in the samples examined by me in the laboratory, in addition to about a dozen different kinds of seeds quite new to the State. I shall now ask your attention while I deal with the principal phases of the work done by the department. In the first place I wish to emphasize the fact that so far this has been of a preventive nature almost entirely, our work being restricted to the control over the entry of weeds from abroad. Once a weed, however, has gained a footing in the State, though it be the worst of noxious weeds, and may occupy only a few square yards of ground, neither the Agricultural Department nor the Commonwealth Quarantine Department has any direct power to eradicate it. There can be no two opinions surely as to the desirability of something approaching co-operation between the State and the Commonwealth regarding this weed question. At present this work of seed and weed control, as previously pointed out, is of a preventive character, and is performed by officers of the State Department of Agriculture under Commonwealth Acts, viz., the Quarantine Act and the Commerce Act. The former legislates against the introduction of weed seeds in agricultural seed, fodders, &c., and the latter chiefly deals with the quality or newness of seeds. All consignments of seeds from oversea countries, on arrival at Port Adelaide, are carefully sampled by the inspectors stationed there, and the samples brought into the Chief Inspector's office (Mr. Quinn) and then tested by myself. In the case of bird and other seed not intended for sowing, the goods are examined for weed seeds, disease, and other impurities only, and if found satisfactory, are released in a day or two. Where consignments are for sowing purposes in addition to the purity test germination or sprouting tests are conducted, and the goods released directly the sprouting test is finished satisfactorily. Samples of all seeds are taken from the bags of the larger consignments by means of a seed trier or sampler which is thrust into the top, middle, and bottom of each bag as far as is practicable. The seed is then placed in a suitable envelope, and labelled with the particulars. On arrival at the office each sample is put in a bottle, numbered, recorded, and kept for about 12 months in case of any dispute arising, &c. Before filing the samples away the necessary examinations are made. From the bulk sample a smaller average sample is taken, weighing from ½ oz. in the case of smaller grass and other seeds up to 8 ozs. in the case of larger seeds like cereals. The weed seeds contained are then picked out and counted, and any dirt, &c., also put on one side and weighed, and finally weevil, mites, and signs of disease looked for. The weed seeds, &c., are then identified and particulars recorded for reference. Few growers would be in a position to identify for themselves the weed seeds found in the various lots arriving from other parts of the world, as they lack the facilities provided in every seed laboratory in the shape of lenses, microscopes, and reference collection of weed seeds. To this end we have secured 100 glass tubes of different seeds from Canada, a collection of weed seeds from New Zealand, besides a pretty complete lot of our own weed seeds which I have personally got together in this State. In addition illustrations and literature help us in this direction. After identification the first thing to settle is whether the seeds represent new weeds to the State. If they belong to a new weed, or one that is not widely established in the State, the consignment is refused admission to the Commonwealth, or destroyed if it cannot be absolutely freed of all seeds by the grading machine which we use for cleaning seeds at the Fumigation Depot, Port Adelaide. Similar steps are taken in respect to weed seeds already established in the State should they be found in a consignment to any considerable extent, or seeds which are accompanied by a large amount of dirt or other inert matter. These steps are taken in the first place to prevent the spread of weeds over the country, and secondly to protect the buyer and grower who probably pays the same price as he would for

pure seed, and sustains a loss in the inferior crop or harvest resulting. Yet another point to be settled is whether the imported seed is true to name, if not it is liable to be excluded and a penalty imposed on the importer for a breach under the Commerce Act. At least two lots of seeds which I shall place before you for the inspection of those interested were detected as being untrue to name within 12 months. In Bulletin No. 109, originally published in the September issue of the *Journal*, I have given the name of 65 noxious and other weeds found in the different kinds of seeds imported during 12 months, and also details of 11 consignments which were cleaned or destroyed. I do not wish to weary you with these details; but to convey an idea as to what expense might have been saved the country and what can yet be done in the future I wish to state that out of these 11 consignments refused admission or destroyed, at least a score of new weeds were kept away from the State. When it is considered that these wholesale consignments of seeds are usually obtained for distribution to retail purchasers throughout the State one need not have a great imagination to picture the damage likely to be done to the properties of individual purchasers, and ultimately the country as a whole. Among these consignments imported for sowing purposes three contained weed pests ranging from 13,600 to 18,192 seeds approximately per lb., including large quantities of two different ragweed seeds which are amongst the worst seeds of North America, since introduced to Europe. It should be borne in mind that unlike many cultivated plants, weeds generally thrive in most climates and soils, though some we well know grow better under certain conditions, and it would indeed be foolish to assume that any of them might not establish themselves if given the chance. In conclusion, let me say farmers in this district as in others have so many imported weeds to contend against they are probably apt to think there can be no new ones left to be added to the list of intruders. If there is one point I would like to emphasize to-night it is that there are dozens of weeds which have obtained a footing in one or more parts of the State, and which have not yet reached you. Further, that most of these strangers to you, judging from their establishment in so many different parts of the world, would thrive here equally well, and some possibly better than in other parts. Some of these are more harmful than any now found in this district. The Bathurst burr is bad, but another variety or species recently found, and it is said now destroyed, at Renmark, is far more formidable, its burr being four or five times larger, and the plant much bigger. A grass at the same place has a burr which would give much more trouble than the burr clover, for at least it can be said in favor of the latter that it enriches the soil. I have not seen any of the deadly dodders in the lucerne here so far, and these colorless parasitic plants are certain death to lucerne. You also seem to be fortunate in the apparent absence of introduced poisonous plants. Persons ordering big consignments at any rate of lucerne, cereals, or other seeds from other districts should consider it a public and a personal duty to have them tested for new weeds to the district. A new weed belonging to the mustard family, which has only been found in one part of Australia was brought to me from the Three Chain Road, four or five miles from Port Pirie, less than two years ago. A single plant has hundreds of seed pods, and has practically no leaves. This plant, like many others, covers only a few acres at present. Farmers would do well to prosecute a campaign against such doubtful plants, which are not wanted in their crops or on their fallows. This weed in particular possesses little foliage, is fibrous, and above all has small roundish pods likely to prove a future curse in South Australian grown wheat. Owing to the fact that farmers are not always able to test the value of seed they intend purchasing or have already purchased, many Agricultural Departments offer every inducement for growers to send samples along to have seed tested, and I would like you to know that by sending any samples to the department they will be examined, and a plain statement as to their contents and quality issued from the seed laboratory free. Dodders and other injurious seeds so often found in lucerne and clover seeds, for example, cannot be easily detected without the use of a lens, &c., and the sending along a sample of an ounce or two to the department before sowing may save a considerable amount of expense and annoyance."

HILLTOWN.

August 31st.—Present: seven members.

THE FARM ORCHARD.—Mr. J. B. Scott contributed a paper on this subject. He said that the home life of the farmer could be made more attractive and enjoyable by the addition of not only a small fruit plot, but a flower and vegetable garden.

Having decided to plant a small fruit garden, one should first decide on the most suitable site with good soil, which was of great importance to the success of the trees, although fruit trees would grow almost anywhere. A good choice of soil would make all the difference to the ultimate success of the venture. If possible the site should be selected on an eastern slope, well drained, and with soil of a sandy nature. The surface of the soil should be kept loose, and an occasional working would rid the land of all weeds. If the trees were planted in the form of a hexagon on an average of 20ft. apart one would be able to plant 125 trees to the acre. That system of laying out the trees enabled one to work the land more easily, especially when turning at the ends with the plough and the cultivator. Large holes for the trees should be dug, and when planting the bottom of the holes should be cone-shaped, and by placing the tree in the centre the roots would slope downwards in a natural position around the cone-shaped earth. The planter should then fill in with fine soil pressed firmly around the roots; if the weather was dry a bucket of water poured around the tree before all the earth was filled in was a splendid thing. After that had soaked away he should fill in the earth to the surface level. After the trees were planted they could prune off to 18in. or 20in. high when they would appear as straight sticks. When starting to grow all buds but the three top ones suitable to form the head should be rubbed off. By so doing one would have a much stronger tree, as all the energies of the tree would be devoted to the buds one wished to develop, the result would be three well-developed shoots, forming the future main branches on which the tree was built. The grower who disliked to sacrifice the fine top would sacrifice future growth and vigor. As to what sorts of trees to plant he suggested almonds and quince trees as suitable for breakwinds. For the orchard of one acre:—Apples—Four Emperor Alexander, four Lord Suffield, four Cleopatra, six Jonathans, four Rokewood, four Rome Beauty, two Ribston Pippins. Apricots—Two early Moorpark, two Royal. Cherries—One Early Rivers, and one Late Duke; four figs. Peaches (early)—One each of High's Early Canada, Downing, Briggs' Red May, Early Rivers, Wiggins, Early Crawford, and two Lady Palmerston; pears, two early and two late sorts; six plums, six prunes, two oranges, and three lemons. The balance could be planted with vines of different varieties. These should be planted in rows 10ft. apart, and 15ft. apart in the rows; after the second year these could be trellised. The land should be well and deeply ploughed and harrowed down before planting, and after every rain the surface of the soil should be stirred, never allowing a hard crust to form; that was the secret of summer cultivation. The more moisture one could retain in the soil the better would be the result. Forming the trees was very important, as on that would depend a good deal as to the future success and vigor of the trees. At the end of the season the three buds saved would have grown quite long, and formed many other small shoots. At the commencement of winter they should all be cut back to within 8in. or 12in. of the first pruning, and the second year one formed from these three branches, three others, making six, which were again cut back at pruning time. That enabled one to get short, thick-set limbs, which made the foundation of the tree strong and sturdy, and able to resist the strong winds, and throwing out strong healthy shoots upon which to carry their fruit, and the laterals would be clothed with fruit-bearing wood. At the third winter pruning one should have a tree 6ft. to 7ft. high, well formed, strong and healthy, and ready for its life work, and one that would be very easily kept in order.

LAURA.

August 8th.

MAKING A LIVING ON SMALL HOLDINGS.—Mr. P. T. Bowker introduced this subject for discussion, and said that he would apply the word "small" to represent a holding of 20 to 60 acres. There were a number of occupations that could be engaged on small holdings, such as market gardening, fruit-growing, bee-keeping, poultry farming, and others, but for the purpose of discussion that evening he would confine himself to that of dairying and pig-raising on a 40-acre farm. The first thing in choosing a farm was to consider its distance from market. It was essential that there should be a market for the produce not too far away, as freights were expensive. It was also necessary that the land should be suited for lucerne growing, and the production of heavy crops of fodder, such as maize, sorghum, oats, wheat, and barley. On the Murray it was estimated that two cows could be kept

to the acre on lucerne land. On that average 20 cows could be kept on a 40-acre farm, and he would try and illustrate that a living could be made from that number of cows, with pigs and a few dozen fowls—work that could be done easily by one man, with assistance from his family. These cows would be classed as ordinary animals, yielding 300lb. of butter per year, about 6lb. per cow per week, which would not, however, be sufficient for a progressive dairyman. Mr. Clements, of Gawler Gap, had a number of cows under test. They were fair-grade cows, something like those to be seen on a number of the best of our farms, not specially selected, and eight of those cows would average about 500lb. to 600lb. of butter a year. However, 300lb. of butter at 1s. per lb., an average price that should be obtained, amounted to £300 from 20 cows; pigs, £75; poultry, £25; young stock, £40; making a total of £435. Expenses could be set out as follows:—Interest on 40 acres at £15 per acre (£600 at 5 per cent.), £30; interest on stock and plant (valued at £500), £25; wages, £30; fodder, £40; sundry items, £30; total, £155; leaving a very fair return for the farmer. There was no doubt whatever that an enterprising man would find it much more profitable to sell his produce, such as milk, for which 1s. or more a gallon could be obtained, with very little more expense than selling butter or cream. Milk at 1s. per gallon would increase the income by at least £150. In reply to a question as to which was the best cow for the Laura district, the speaker said that he preferred the Jersey or the Jersey crossed with another good milking strain. Mr. E. G. Blesing said he had found dairying more profitable on the plains than in the hills. Replying to a question concerning silage, Mr. Bowker said that chaffed maize, cut just as the kernels were formed, made the best ensilage. Other good silage crops were oats, grass, and wheat, when short and fine. That could be put into the silo without being chaffed, but it was more useful fed green. In growing maize it was essential to get the best variety for the district. Maize was the great standby of the Adelaide dairymen to balance up the ration with lucerne.

PORT BROUGHTON (Average annual rainfall, 14.44in.).

August 20th.—Present: 10 members.

THE ADVANTAGES OF THE AGRICULTURAL BUREAU.—Mr. R. H. Evans contributed a paper on this subject, in which he said the farmers had at their disposal an institution which would enable them to increase their knowledge of all rural pursuits. Especially in regard to stock troubles were they able to obtain first-hand expert information. The meetings of the Bureau enabled farmers to meet and discuss together various items of interest, and in that manner much was done to educate the man on the land. Members discussed the paper, and all agreed that the Bureau was a most worthy institution, and that members should do all in their power to further the work of the Branch. This being the annual meeting the Hon. Secretary (Mr. J. H. Fletcher) read the annual report and balance-sheet.

PORT PIRIE (Average annual rainfall, 13.21in.).

June 28th.—Present: eight members.

A short paper dealing with the blacksmith shop on the farm was contributed by Mr. Kuehner and read by the Hon. Secretary (Mr. A. M. Lawrie). In discussing the paper Mr. H. Johns said many small jobs, such as mending chains, making eyebolts, &c., could easily be done after a little practice. Other members also discussed the paper.

REDHILL (Average annual rainfall, 16.79in.).

August 28th.

The Hon. Secretary (Mr. W. Pengilly) read an extract from a lecture given by Mr. F. E. Place (Veterinary Lecturer) at Murray Bridge. Mr. J. McAvaney did not think it was wise to burn the haystacks, as in the case of a drought the hay could be fed to cattle and sheep. Mr. J. A. Potts recommended sprinkling the hay with sulphur before chaffing, as a help to ward off stock troubles. Mr. Coffey advised members to take precautions against the mice plague in future.

WHYTE-YARCOVIE (Average annual rainfall, 13.91in.).

August 25th.—Present: 10 members.

METHODS OF SHEARING.—In a short paper on this subject Mr. A. E. Green advised each farmer to have a small woolshed of his own. Co-operation would very likely cause disagreement before the season was finished. He was not in favor of shearing by machinery. Although the sheep might be shorn more quickly by machinery, the comb of the hand piece running through the wool divided the fibre, and the sheep were not so well able to withstand the weather. If a sheep were killed soon after being shorn by the machine the marks of the comb would be found inside the skin, which proved that the wool had been pulled and not cut off. In shearing with the blades the fibres of the wool were pressed together, which left a fair covering for the sheep, and if in a fair condition they would not feel the heat or cold nearly so much as those shorn by the machine. A good plan was to yard the sheep as closely as possible prior to shearing, as that would make them sweat, and the fleeces would be much easier to clip. The sheep should be carefully taken to the board and shorn with all possible speed. The wool was then picked up and put on the table with the outside of the fleece upwards. Care should be taken to see that all dirty and stained pieces of wool were taken from the fleeces and kept separate, or else the value of the clip would be affected. The belly pieces which were taken off first should be kept in a bag by themselves. When shorn the sheep should be branded before leaving the yard and then put back into the paddock. Mr. F. Lock agreed with the paper, and thought that more pains should be taken in classing the wools. Mr. G. F. Jenkins thought that it would pay farmers to erect a small woolshed between them, and if the machine shears were used by experienced men he thought they would give good results. Mr. E. J. Pearce also spoke in favor of co-operation. Mr. F. W. Robinson thought that if the sheep were branded about a week off shears the brand would be visible until next shearing season.

WIRRAWARA (Average annual rainfall, 18.91in.).

September 1st.—Present: 18 members.

IMPROVING HOME SURROUNDINGS ON THE FARM.—In a paper under this heading, Mr. C. H. Curnow said that one should first improve the home surroundings by fencing in a small area around the house in which fruit trees and vegetables could be planted. The sheds were also of importance, and he thought that if these were built at the rear of the homestead it would improve the appearance of the farm. Nothing looked worse than to see a farm with broken down fences, and that was also dangerous to stock. Trees could also be planted in the paddocks as shelter for the stock. If good classes of stock were kept it would be found that the work on the farm would be much more interesting.

YACKA.

August 30th.—Present: eight members.

ROLLING.—In a short paper dealing with this subject Mr. H. Harrison said that the roller could be used to a great advantage on wheat fields. By rolling the land and closely compressing the particles of earth, one excluded the cold winds or the rays of a drying sun from the roots of the young plant. Rolling could be performed repeatedly on grain crops during the spring months. Care should be taken not to roll the land when very wet, or the action of the sun would form a hard-baked surface.

BELALIE NORTH, July 7th.—ANNUAL MEETING.—The Hon. Secretary (Mr. W. Cummings) read the annual report, and in the course of his remarks, spoke of the advantages to be derived from being a member of the Bureau. He would like to see more interest taken in the workings of the Bureau, and urged members to attend more regularly.

GEORGETOWN, August 4th.—Mr. A. Hill introduced a discussion on the Wheat Pool. It being the annual meeting, election of officers for the ensuing year took place.

MUNDOORA, August 28th.—Members discussed the resolutions to be brought forward at the annual congress, to be held in Adelaide.

LOWER-NORTH DISTRICT.

(ADELAIDE TO FARRELL'S FLAT.)

NANTAWARRA (Average annual rainfall, 15.90in.).

August 30th.—Present: seven members.

PREVALENCE OF MICE.—In opening a discussion on this subject Mr. J. H. Nicholls said there were still a large number of mice about, and he thought that was because there had not been any severe frosts. He thought that preparations should be made for the prevention of damage being done to haystacks, &c., in the event of there being another plague during the next year. Mr. Smith recommended the building of a ring fence of galvanized iron, using sheets of 6ft. x 3ft., and post and necessary rails, these being put on the inside of the fence, and the iron let into the ground to 6in. or 9in. Mr. R. P. Uppill thought that the price of iron, and the straw or sheaves blowing off the stack and accumulating would render the fence worthless, as the mice would still have free access to the stack. Mr. Green-shields thought that if one were to cut the hay a little on the green side the mice would not do so much damage, and also the straw would contain more nutriment. Mr. Sutton also spoke in favor of the ring fence, and thought that the expense so incurred would more than repay in the amount of hay that would be saved. Mr. Smith thought that the fence should be built some little distance out from the stack. He had also noticed a large number of rats in that district, and thought that before long they would become a very serious pest.

RIVERTON (Average annual rainfall, 20.48in.).

July 25th.—Present: 21 members and 25 visitors.

FARM MANAGEMENT.—“Carefulness,” said Mr. H. W. Davis, in a paper on the subject of farm management, “was most essential for the successful management of the farm. Neglect meant the loss of both money and time. A small holding well managed, and with good stock on it, was far better than having more land and not caring for the stock. The homestead should be situated as near as possible to the centre of the farm, so that the teams could be brought into the stable to feed in the middle of the day. When erecting subdivisinal fences it was a wise plan to have races leading from the various paddocks to the water trough in order that stock in the grazing paddocks could have access to water at any time. Buildings should not be put too close together, that would minimise damage in the event of fire. Stables drained better if built on rising ground. It was much better to have the chaffhouse in the centre of the stable, so that horses could be fed easily and quickly. One mistake noticeable in many homesteads was that the rubbish and manure from around the stables and sheds blew directly in and around the doors of the house. A good plan to avoid that was to build the barn and implement sheds between the stable and the house. Working horses should have good warm, roomy stables divided into single stalls. If they were shut or tied up at night straw bedding should be provided in abundance. Small quantities of feed at regular intervals were better than large quantities fed irregularly. It should be seen that the team was in good condition before the heavy work began. Grooming every morning was better than a little extra feed, as that removed sweat and impurities from the body. He advised every farmer to breed his own foals, and to have the services of the best horse procurable. All young stock on the farm should have careful attention, and on no account be allowed to fall into poor condition, especially in the yearling stage. Cows, pigs, and poultry, if given proper care and attention, would help to pay many of the expenses. Fowls should be reared during winter months in order to be in

good laying condition when eggs were a good price. The fowls should have a proper shed to roost in, otherwise they would soon find their way to the implement sheds and stables. Fallowing should be started soon after seeding in order to have the benefit of the early rains, and the depth should be varied every two or three years. If the fallow was harrowed after heavy rains it would help to kill weeds and conserve moisture. All cereals before being sown should be carefully graded. When purchasing machinery notice should be taken of the following points:—Durability, simplicity of construction, lightness of draught, and effectiveness in working. When the implements had finished work for the season they should be thoroughly overhauled, and if necessary repaired and then put away into good sheds. Harness would last longer, and would be easier to handle if oiled well during the year. No farm was complete without a blacksmith's forge, as many pounds could be saved by doing little jobs in spare time or on wet days; a small supply of split links, eye-bolts, washers, bolts, and nails of various sizes, if kept on hand, would save much time in the event of breakages. A garden would also prove profitable for growing vegetables for the table. Many accidents would be avoided by having an unused corner or rubbish heap fenced off, where pieces of wire and glass could be put, and thus save injuries to stock. Provision could be made against dry seasons by building a stack of straw every year, and by saving cocky chaff, &c. Bookkeeping was perhaps one of the most essential factors to good management. If books were properly kept and balanced monthly or quarterly, they enabled a farmer to see in a very short time how things were going, and what branches of the farm were not paying their way." The Hon. Secretary (Mr. E. A. Gray) presented the annual report. The Acting Secretary of the Advisory Board (Mr. H. J. Finnis) was present, and delivered an address on the organization and work of the Agricultural Bureau.

RIVERTON (Average annual rainfall, 20.48in.).

August 25th.—Present: 22 members and three visitors.

WHEAT—THE WORLD'S COMMERCIAL PRODUCT.—In a paper dealing with this subject Mr. E. A. Gray said amongst the world's commercial products the first place, if not in monetary value, at any rate in importance, must be given to the food-stuffs. The cultivation and production of wheat had been undertaken by man from time immemorial, and some idea of the enormous development of the trade in food-stuffs could be gathered from the fact that the annual value of wheat alone imported into the United Kingdom was £35,000,000. The soil to which the farmer entrusted his seed should possess certain qualities, and the plant able to extract a sufficient quantity of moisture from the soil. Soils of a good loam were the best on which to grow wheat, but with skilful farming and selection of proper varieties of grain good returns can be obtained from sandy country. When necessary the nature of the land might be modified by the addition of different manures. Thus it was necessary to add lime to sandy soils, and, as a rule, marl was used for that purpose. The element that was added to the soil should not only modify its physical nature by giving it greater density, but it should also, by its chemical composition, increase the chance of successful cultivation. It sometimes happened that the sub-soil contained the elements that were needed in the top soil, and in that case the land should be deeply ploughed and thoroughly mixed with the upper layer. Briefly outlined, the elements required were sufficient, but not excessive moisture, lime, and the indispensable elements of plant food, such as nitrogen, phosphoric acid, and potash. The great advantage of chemical manures was that they enabled the farmer to modify the composition of the land, and add to the fertility of the soil. Farmyard manure increased both the physical and the chemical conditions of the soil, besides adding to its moisture-holding capacity. Different plants had different needs; one required an abundance of nitrogen, whilst another took more potash or more phosphoric acid out of the soil. Hence it might be easily understood that if the same variety were grown on one field for several successive years, it would soon exhaust the element which it particularly required. The soil should be in a proper condition, neither too hard, nor too soft. Methods of cultivation varied, according to the soil, climatic conditions, &c. The soil was turned over with the plough, harrowed, and cultivated to break up the clods to put it in better tilth, and rolled if necessary to give greater firmness. It was impossible to fix a date for the sowing, for that was a question to be determined by experience, and varied greatly accord-

ing to local conditions. The farmer should be very careful in his choice of seed. It was futile to have good land, to till it well, and then sow seed of an indifferent quality. He then dealt with different methods of harvesting.

SALISBURY (Average annual rainfall, 18.57in.).

September 4th.—Present: 13 members and one visitor.

WOOL-CLASSING.—Mr. G. S. Jenkins contributed a paper on this subject. Before being thrown on the table for classing the fleece should be skirted in order to make it uniform in length and quality, he said. It should be drawn out flat, and the skirting commenced behind the points of the shoulders, the sweaty edges being removed with the fingers. After working in that way to the topknot and collar, and removing the same, the other side should be treated in a like manner, then back to the starting point, working the opposite way, and then around the lower part of the breech, taking off the short harsh wool on the lower portion of the leg, and from there to the tail, particular care being taken to remove all stained wool. After the rough edges had been removed from the fleece the sides and ends should be thrown over a few inches, and the side farthest away from the operator slightly turned in. The fleece should then be folded right over on the edge nearest the table and rolled from the shoulder to the breech, when it would show up to the best advantage. The staple should then be tested. For a small flock of 200 or 300 sheep the tender wool could be placed with the short wools, but with a nice-sized flock it should be kept by itself. AA, or first grade wools, should be the longest, brightest, and most attractive fleeces, and light in condition. The A grade should include those shorter in staple, heavier in condition, and less attractive to the eye. The skirtings should be made into three lots, namely, first pieces, the longest and brightest of the skirtings, the sweaty and short trimmings of the first pieces or any short in staple and stained wool, that should be dried before bagging. The table and floor locks could be put together, although in a big flock they should be kept separate. In a large flock the classes generally were as follows:—AA, fine, long, and bright wools, and light in condition; A, shorter in staple, heavier in condition, and therefore less attractive looking, and possibly a little finer; BB, long, bright, and attractive, light in condition, but coarser in character than AA grade; B, shorter in the staple than BB, heavier in condition and less attractive, and if anything a little finer than BB; CC, very fine, heavy-conditioned, and fatty fleeces. All tender wools should be kept by themselves unless there was a sufficient number to make two or three classes, which might be the case in the time of a drought. Crossbred and longwools were classed on length and quality only. The counts of Crossbred and long-wooled breeds were the very strong Lincoln 28s and 36s to the three-quarter cross, 40s and 44s; middle cross, 46s, and the comebacks 50s, 56s, and 58s counts, although comebacks could be much finer. To class a Crossbred clip of 1,000 sheep or thereabouts, possibly three classes could be made, as follows:—40s and 44s, 46s and 50s, 56s and 58s, but in classing a few thousand the clip should be classed to the fullest extent, which meant keener work, making a separate lot for each count. The counts for Merinos were from 58s (very strong) to 100s (very fine). In a farmer's flock of 200 or 300, either Merino or Crossbred, it should only be necessary to make two classes; the long, bright, and attractive fleeces for the AA grade, and the short and less attractive fleeces for the A grade. In skirting a Crossbred fleece it was only necessary to skirt very lightly. In dealing with a big clip, either Crossbred or Merino, should the clover burr be troublesome, all affected wool should be skirted off the fleece, which was generally on the lower part of the shoulder, along the lower portion of the ribs, on the belly, and the lower part of the breech. Those skirtings should be kept separate. Should the burr or grass seeds be well established through the fleece and flock it would be wiser to skirt lightly. All belly wool should be skirted, the long bright wool for first bellies, and the trimmings for bellies, great care being taken to remove the urine-stained wool. No amateur should attempt to classify a big clip, as it was very easy to run one class into another where five or six grades were being made. The floor should be kept clean, so that the skirtings should not be trodden upon, and the board swept after each sheep had been shorn. Where a large flock was concerned the wool of ewes, wethers, and hoggets should be classed separately, and branded accordingly, and also class separate the ewe hoggets and wether hoggets, as ewes grew a much softer fleece,

which realised a better price. Last, but not least, a grower should not in any way deceive the buyer by placing the fleeces in the bale so as to have some inferior wool in the middle, where it was not likely to be seen. It might not be noticed when sold, but would be found out later on when taken out, and the brand would go down in that buyers' bad books, and other buyers' books as well.

GAWLER RIVER, August 27th.—The Viticultural Instructor (Mr. H. E. Laffer) delivered an address on "Pruning and Training of Vines."

LYNDOCH, August 30th.—Mr. W. H. Lawes read an extract on the manufacture of alcohol from wheat. Messrs. Klauber and Lawes tabled samples of rope made from binder twine. On September 7th Mr. G. Quinn gave a demonstration of pruning in Mr. Hammat's orchard.

MALLALA, September 7th.—Messrs. F. S. Alford and W. Miller, of Adelaide, visited the Branch, and spoke on the "Bulk Handling of Wheat Scheme."

ROSENTHAL, September 5th.—The Government Veterinary Lecturer (Mr. F. E. Place) gave a post-mortem demonstration on a pig, and in the evening delivered an address on the treatment of mares before and after foaling.

TWO WELLS, September 1st.—Mr. G. M. Cordon contributed a paper on "Soil," which was well discussed.

WATERVALE, August 6th.—Mr. J. Halls opened a discussion on the planting of vines. Mr. J. Seovell thought the best plan was to have a piece of wire marked at the correct distances. Messrs. Davis and Grace were each of the opinion that eight sticks should be used.

YORKE PENINSULA DISTRICT.

(TO BUTE.)

BRENTWOOD.

August 2nd.—Present: 15 members and two visitors.

LAYING OUT A 1,000 ACRE FARM.—In a paper on this subject Mr. W. G. Boundy said a good durable fence should first be erected by using gum posts and an iron dropper alternately with six wires and a barb on top. Every gateway on the farm that was likely to be used in taking the farm implements from one paddock to the other should be 14ft. in width. The land should be cut up into five 100 acre paddocks, and four 80 acre paddocks, leaving some small paddocks, say three of 50 acres each near the homestead for stock, chiefly horses and cows; two small green feed paddocks, a fruit and vegetable garden; the house and sheds would easily use up the remaining few acres. A belt of mallee or other native trees should be left in each paddock to provide shelter for stock. The house, sheds, &c., should be built as near the middle of the section as possible, and on sloping ground, as that was much better for draining. The stables, chaff and engine house should be built together and put at least four chains away from the house. The best kind of stables were built of stone, and facing the east. Two eight-horse teams would be necessary to work a farm of that acreage, so one should have 16 stalls in the stables, with mangers 2ft. deep and 2ft. wide to enable loose hay to be fed without waste. Each horse should have a stall of its own and a peg to put its harness on. One loosebox could be built at one end of the stable. The barn and implement shed should be kept well away from the stables in case of fire. The watering arrangements of the farm should consist of pipes from one paddock to another, with iron troughs and ball taps. An 18ft. trough at the sheds, and 12ft. troughs would be found large enough for the stock away from home. Mr. J. Alderman considered it better to leave or plant trees only in the corners of the paddocks, as trees along the fence rendered too much soil unproductive.

MAITLAND (Average annual rainfall, 20.08in.).

September 1st.—Present: eight members.

QUESTION BOX.—In reply to a question asked by a member as to what was the correct set of a stump-jump plough, the Hon. Secretary (Mr. C. Piteher) said if in the case of an implement fitted with an ordinary P share, it should be set to enable the share to lie as flat as possible; if the plough had the shares generally used in that district, the furrow wheel should be perfectly level with the bottom of the plates or shares, and should run parallel with the work, the draught or head set, so that the plough was evenly balanced, and on no account should the head be altered to suit the team, but the team driven to suit the plough. Mr. Bentley said that if the back furrows were twisted in a little the plough would grip the ground better. Mr. E. G. Jarrett thought the trouble was caused by the majority of ploughs being constructed to cut too wide. Mr. Bowden said that the distance between the main swing and the plough had a lot to do with the implement working evenly.

WESTERN DISTRICT.

CUMMINS.

September 1st.—Present: nine members and two visitors.

FORESTRY.—In a paper under this heading Mr. W. B. Walkolm said in that district they had two of the main essentials for successful tree culture—a good reliable rainfall, and what was even more important, a strong and retentive subsoil. Trees only lived on the surface soil for a time, and then their roots found their way into the subsoil, and from that obtained their sustenance. The types of trees that had proved themselves adapted to that country were sugar gums, pines, wattles, and olives. He believed there were many other and perhaps more valuable trees that would do equally as well. He had planted a few black wattles four years ago, and they were now 12ft. to 18ft. in height. Gums planted six years ago were 25ft. to 30ft. high, and these trees had received little or no attention beyond the natural mallee being grubbed out in their vicinity. So far he had considered only the value of trees as timber, but he thought they would be even more valuable in that country as shelter belts and breakwinds while growing to maturity. For a shelter belt or breakwind he advocated planting four rows of trees, with a distance of 20ft. between the rows, the alternate rows to be planted 25ft. and 10ft. between the trees in the rows. That would give two rows of large topped shady trees and two rows of long straight high trees for rails, timber, &c. A temporary but substantial fence to keep the stock from destroying the trees during the first five or six years was an absolute necessity, and if that was erected very little other work was required to ensure success. The number of trees required to plant a breakwind one mile in extent, as set out above, would be two rows of 528=1,056, and two rows of 211=422, or a total of 1,478 trees, and they would take up roughly 8 acres of land.

EDILLILIE.

September 1st.—Present: seven members and six visitors.

SHEEP ON THE FARM.—Mr. T. Knight contributed a paper on this subject. He said every farmer should keep as many sheep as his land would carry, but care should be exercised to see that the land was not overstocked. After many years' experience he was convinced that sheep were the most profitable side line one could keep on the farm. They assisted in keeping the land clear of rubbish, and their droppings increased the fertility of the soil. He favored the Merino breed as the best suited for that district, as they had a good long staple of wool, and were not such bad 'fencers' as others. Sheep also helped to supply good meat for the homestead. He spoke in favor of the practice of the annual dipping of sheep, as

flies were very bad in that district, and the dip acted as a good preventive to the blowfly. All dirty sheep should be breeched during May of each year, and if one had small paddocks the stock could be changed from one paddock to the other at frequent intervals. The lack of suitable means of transport was a great drawback to the lamb industry in that district.

ELBOW HILL (Average annual rainfall, 11in. to 12in.).

August 25th.—Present: seven members.

THE CARE OF AND THE BEST HORSE SUITED FOR THE DISTRICT.—Mr. T. Wildman, in a paper dealing with this subject, said experience had taught him that the medium draught was the type of horse best suited to that district, seeing that it was able to obtain a good portion of its living in the paddock, and at the same time keep in good condition. He thought every farmer should rear two or three foals at least every year in order to replace any losses that might from time to time occur. He emphasized the fact that farmers should only breed from the best classes of stock obtainable. The horses should be fed four times a day, and with the best feed that one had on hand or could procure. A driver should take great care of his team, and pay special attention to the horses' shoulders. If the harness was chafing it should be attended to, and arranged in order to give the horse as much ease and comfort as possible. A young horse should not be worked until three years old, and should only be worked lightly. In discussing the paper, Mr. R. T. Ramsey spoke in favor of the heavy draught horses. Mr. T. V. Wake preferred medium draught horses. Mr. H. J. Wheeler said great care should be taken to see that each horse of the team did its proper share of work. Good feeding was most essential, and he agreed with the writer as to the class of farm horse. Mr. J. Wake said the horses should be well groomed. He had found sulphur a good remedy for sore shoulders and scalds.

GOODE (Average annual rainfall, 12in. to 13in.).

September 5th.—Present: 11 members and three visitors.

CARE OF COUNTRY ROADS.—The Hon. Secretary (Mr. Walter Folland), in a short paper drew attention to the difficulties under which settlers in the outlying districts labored in respect to roads. He submitted several suggestions, which if adopted were calculated to relieve the position. It was thought that the quarter-chain grubbed roads were insufficiently wide for the safe passing of vehicles.

MILTALIE (Average annual rainfall, 14.55in.).

August 4th.—Present: 11 members and four visitors.

FARM LIFE COMPARED WITH OTHER OCCUPATIONS.—In a short paper on this subject Mr. E. Story compared various trades with the life of the farmer, in which he pointed out the advantages and disadvantages that beset one in every walk of life. The Hon. Secretary (Mr. W. E. Hier) opened the discussion, and said he had noticed that although farm lads sought other occupations, they in time came back to work on the land. Mr. J. P. McEachern thought the farmer's life was best in good seasons; even though they had to work, at times, longer hours, the work was not so hard as many other occupations. Mr. J. S. Jacobs said that a farmer, to be successful, must use his brains the same as those employed in the city. Messrs. Smith, Story, Bagwell, and Aunger also discussed the paper.

SALT CREEK.

September 1st.—Present: 14 members and one visitor.

TIDINESS ON THE FARM.—In the course of a paper on this subject Mr. R. S. Frost said every farmer should provide accommodation for the housing of all implements, as the damp air and rain ruined the woodwork and bearings. Machines such as the harvester, binder, and drill should be thoroughly overhauled, and all repairs

effected before being put away. If the woodwork of the machines was painted say once every two years it would lengthen the life of the machine. It was not wise to put oil on crown wheels, pinions, or chains, as it collected grit; blacklead should be used instead. When repairing harness it was not advisable to use rivets, as they were likely to crack or burn the harness if left in the sun. The harness should be oiled and kept under cover when not in use, and when necessary should be repaired by sewing with hemp. If odd pieces of wire were put in a safe place there would not be the danger of injury to live stock. A blacksmith's outfit could be obtained for about £25, and much time and expense would be saved in busy seasons if there was a smithy on the farm. Special attention should be given to the fences and the gates, as if these were kept in an untidy condition it gave the whole of the farm a bad appearance, besides being very apt to cause injury to stock. With a little care and attention they could be kept in good order:

YANINEE.

September.—Present: 10 members and eight visitors.

CROP ROTATION ON A SCRUB FARM.—In the course of his remarks in a paper on this subject, Mr. R. Hicks said that first of all to be considered was the nature of the timber to be cleared before the land could be cropped. There was no doubt that it was a payable proposition to fallow new land, provided sufficient land could be cleared to enable one to do so. In the case of an easily cleared block a good plan would be to roll down two areas of 200 acres each. One of these, A, could be cropped and the other, B, fallowed. In the second year a further 200 acres would be cleared. That area, C, would be fallowed, while A and B were cropped. Similarly in the fourth year another paddock, D, would be fallowed, and together with A, B, and C, cropped. Next year A would be fallowed again. Proceeding in that manner rotation would be as follows:—Fallow, wheat, wheat, and thereafter fallow and wheat alternately. With a section not so easily cleared the only difference would be that none of the land would be fallowed before the first crop, the clearing being too costly and slow to allow the land to lie idle the first year. In both cases the growing of more than two crops in succession for a start was not advisable, because the shoots appeared to be fairly easy to deal with in that district. In the case of sandy country it was a good plan to sow a crop of oats the first year. They did better than wheat on the poorer land, while in addition a good stubble burn could be obtained, thereby scorching the shoots. That idea would also obtain on some of the grey and colder country in the locality. After the land was cleared the fallow and wheat rotation could with advantage be altered to (1) fallow, wheat, grazing; or (2) fallow, wheat, oats, or barley, as three-year rotations, or to fallow, wheat, oats, or barley, grazing as a four-year rotation, the latter taking first place. It was urged that whatever system was adopted, the land should be ploughed at least once for every crop. The Hon. Secretary (Mr. H. B. Scholz) also read an extract on "How to Feed Cocky Chaff and Straw," which was well discussed.

YEELANNA.

September 3rd.—Present: 16 members.

FENCING.—"It was advisable to put good fences on the farm rather than to be constantly repairing old, broken-down ones," said Mr. H. Glover in a paper on the subject of fencing. Where fencing posts had to be brought from long distances a good fence could be made by putting a post every half a chain with one iron dropper or post between, and a strainer every eight chains. All posts should be put 2ft. in the ground, and strainers 3ft. Three feet six inches was a most suitable height for a boundary fence; that was a convenient height for using material as follows:—Barbed wire on top of posts, plain No. 8 wire 9in. below barbed, and a No. 10 wire 25in. from the top of the post. By putting the netting 3in. in the ground and fastening securely to the two plain wires one would have a very serviceable fence. A good serviceable division fence could be made by placing posts and droppers the same distance apart as in the boundary fence, but the height of the fence need be only 3ft. 3in., with barbed wire on top, and four No. 10 wires placed as follows:—First wire 10in. from barb, next 8in. lower, and the other two

wires 7in. apart. In selecting timber for posts it was always advisable to get old timber with very little sap in it, for in a wet district like that all timber decayed very quickly, and any young timber would rot off in about three years. He had tried gum, pine, teatree, and mallee, and thought gum was the best, but the posts should be split from old timber. Round gum posts did not last long unless cut from very old trees.

BUTLER, September 3rd.—The meeting was held at Mr. C. F. Jericho's residence, who gave an address on "Experimental Work in Butler," and a discussion took place on the Congress agenda.

COLTON, September 1st.—The meeting took the form of a discussion on the Government handling of wheat.

GREEN PATCH, August 27th.—Members discussed various questions of stock troubles, and the topic of fox destruction.

KOPPIO, August 27th.—Members gave results of their harvest returns, and a good discussion followed. Yields in most cases had been very good, which was due to the very good spring rains that had fallen. It was noticed that mid season wheats had yielded much better than either early or late varieties. The question of fox destruction was also discussed.

PENONG, September 1st.—The Hon. Secretary (Mr. O. J. Murphy) presented the annual report, which showed that eight meetings had been held during the year. The election of officers then followed.

WARROW, August 25th.—A good discussion took place on the fox question.

EASTERN DISTRICT. (EAST OF MOUNT LOFTY RANGES)

BERRI.

June 6th.—Present: 19 members.

ANNUAL MEETING.—The Hon. Secretary (Mr. W. R. Lewis) read the annual report, which showed that seven papers and three addresses had been given. Mr. F. R. Arndt read a paper on the advisability of forming a Citrus Growers' Association. The election of officers followed. At a meeting held on August 8th Mr. F. Arndt read a very interesting paper on "Manuring of Orchards."

BOOKPURNONG EAST.

September 1st.—Present: 12 members and three visitors.

SHEEP ON THE FARM.—In a paper under this heading Mr. R. J. Mayfield said he favored Merino sheep for that district, and was very keen on keeping more sheep and hand-feeding them. He also advised the sowing of oats to be fed to the sheep as corn. It was not wise to run sheep in scrub unattended. Every farmer should have a straw stack, as that had been known to save many flocks during a bad season.

BORRIKA.

September 1st.—Present: 16 members and two visitors.

TAKEALL.—Mr. E. L. Cowled submitted a paper on this subject, in which he outlined the characteristic appearance and development of takeall in crops. It was a prevailing notion, he said, that an affected paddock could be bare-fallowed for one year, and the succeeding year sown to wheat, without a danger of the recurrence of the trouble. That was a mistake, as the fungus carried over on self-sown wheat, stubble, etc. A method of prevention which he suggested was

first of all to burn all straw on the affected paddock, fallow, keep the fallow clear of self-sown wheat and thistles, either by means of sheep or cultivation, and in the following seeding crop with oats. After the oats had been stripped an endeavor should be made to secure a clean running burn. After fallowing again the land should be fit to carry wheat, although if the disease were very bad a second crop of oats might be necessary. When new land was being handled, he suggested the following procedure as a means of forestalling the development of the disease. Wheat should be sown the first year, the stubble burnt, and the land cultivated lightly the following seeding and sown with oats. The oat stubble should be burned, and a self-sown crop of oats allowed to grow. That could be fed off, and the land fallowed for wheat the following year. That meant one wheat crop each four years. An alternative, though not so safe as the preceding, was wheat, oats, fallow—i.e., wheat every three years. The fallowing should be done early whilst the ground was wet, and be worked back in September or October, and then left until seeding. Dry working was to be avoided, as it encouraged the development of the disease. He then mentioned several instances in illustration of the manner in which the trouble spread.

BRINKLEY.

August 25th.—Present: 10 members and two visitors.

COUNTRY SHOWS.—In a paper dealing with the management of country shows Mr. E. Schenscher made the suggestion that the generally high prize money awarded for jumping events might be reduced, and a corresponding addition made to the awards for stallions and brood mares of draught stock. Implements, he thought, should be judged on performances, and he suggested that a trial in the field should be held on the day preceding the show. The general provision in grain sections was for a bag of oats, wheat, or barley; more interest was likely to be taken if separate prizes were allocated for different varieties. Certain forms of "preparation" of exhibits should be prohibited by the rules of the society.

CLAYPAN BORE (Average annual rainfall, 16in. to 17in.).

July 30th.—Present: six members and two visitors.

Mr. S. Gray read a paper on "Fallowing." In discussing the paper Mr. J. Small said sheep should be kept on the fallow to help to keep it clean. Mr. J. Gray said that fallowing should be done early and all stumps picked off before seeding. Mr. Robinson thought that grass land burnt off would be equal to fallow. He also spoke in favor of keeping sheep on the fallow.

CLAYPAN BORE (Average annual rainfall, 16in. to 17in.).

August 27th.—Present: eight members.

SHARE FARMING.—Mr. J. Small, in contributing a paper on this subject, said he wished to refer only to the class of land in that locality. He advised the intending share farmers to see that the block was properly fenced and subdivided, in order that stock could be kept from the growing crop, and that when seeding or fallowing was finished, the horses would not have to be paddocked elsewhere. There was little in the share system, except for the man with grown up sons. The finances of the share man were also a determining factor. The landlord should supply all seed and super., and sufficient bags for his portion of the crop. He thought the parties should each take a certain portion of every 100 acres sown. Wheat was a more payable crop than oats, and he suggested that the tops of sand ridges should not be cultivated. Taking everything into consideration, he thought the best plan was for an intending farmer to take up a block of scrub land from the Government. In discussing the paper, Mr. E. Colwell said that carting stumps was a big help to the share farmer, and also, if possible, a few sheep, cows, and pigs should be kept. Mr. Gray agreed with the writer that the paddocks should be subdivided. The chairman considered that the agreement should be carefully studied by both parties, and he preferred having a Government block to working on the share system.

COONALPYN (Average annual rainfall, 17.49in.).

August 3rd.—Present: Eight members and three visitors.

POINTS FOR FARMERS.—In a paper dealing with this subject Mr. J. F. Pitman said the horses should have first consideration on the farm. If the land was not very stony there would be no need to have them shod, but care should be taken to keep the hoofs well trimmed, or they would be likely to cause a sprained foot. When harnessing the horses the forelock should be free, as that helped the horse to keep flies out of its eyes. The mane should be pulled out from under the collar. If the animal had sore shoulders dry black lead should be applied; that would help to prevent the collar from chafing. The team should be trained to start together, and that would save many broken chains and straps. All machinery should be kept well oiled and all nuts tightly screwed up. A good protection for keeping the dust out of the wheels could be made from a piece of leather. At harvest time some chaff should be put under the wheat heap, and especially under the bags when ready for loading to prevent the damp from the ground going into the wheat. At a meeting held on August 31st Mr. H. Redman contributed a paper on "Sheep on the Farm." He said sheep were a valuable asset to the farm, as in addition to giving a fleece of wool and a supply of lambs they kept down the weeds on the fallow and provided meat for the home. Overstocking should be avoided, and the sheep breeched before there was an abundance of green feed, as that would save a good quantity of wool. The high price of fencing material at the present time was one of the chief hindrances to a man purchasing sheep, but efforts should be made to procure a few good ewes and the services of the best ram. Oats could be grown to advantage as sheep feed. A great factor in having sheep on the farm was the benefit the land received from the droppings. Rape could be sown mixed with super, but care should be taken not to allow it to stand too long, as there was a danger of the acids in the super killing the seed. Three pounds to the acre was about the usual quantity sown. He spoke in favor of the Merino as the best class of sheep for that district, chiefly because they were not such bad fencers as other breeds, and also because of their hardy nature. Wheat-growing alone was not so remunerative as in past days, and the best method of adding to the value of the block would be to keep good sheep on the farm.

MURRAY BRIDGE.

June 26th.—Present: 26 members.

SEASONABLE NOTES.—In an address under this heading Mr. C. G. Savage (Manager Government Orchard, Blackwood) said:—"Land that is to be planted as an orchard should be thoroughly cleared; trees and bushes and stony reefs should be removed to a depth of 12in. to 18in., and the remaining lower layers of stone be shattered with explosives and the surrounding soil be drawn over it. The land should be ploughed deeply and subsoiled; this is best done before the land is planted. Two ploughs are used, the first being a single-furrow plough, which turns over a deep furrow; the second plough follows in the same furrow, and stirs, but does not turn up the subsoil; this second implement is usually a special plough made for this purpose, or an ordinary single-furrow plough from which the mouldboard has been removed. In tests set out at the State Experiment Orchard, Blackwood, the trees planted on land that has not been subsoiled are not making the growth or bearing the crops that the trees are that are planted on land that has been subsoiled. Subsoiling is in some cases done with the aid of explosives; this consists of boring a series of holes throughout the block to be treated, and charging the same with explosives, which, when exploded, shatter and crack the soil and subsoil. Of course these methods of preparing land have at times to be modified, especially on deep sandy land in exposed positions, which would drift if ploughed up deeply and exposed to the weather; these conditions prevail at some of the irrigation areas. In this case it is advisable to work deeply the soil where the rows of trees will stand, and from year to year, as the trees increase in size, to widen the cultivated strip until the whole of the orchard is under cultivation; by this time the trees will afford a fair amount of protection against drift. The matter of cover crops should be seriously considered. The planting of crops will serve a dual purpose—the land is prevented from drifting, and the soil is enriched in vegetable matter when the crop is ploughed in, especially if some legume has been planted, such as peas or vetches,

as these plants will also add nitrogen to the soil. Where irrigation is practised the grading of the land is a big consideration. Some of the experienced settlers upon the irrigation colonies contend that it pays, in the long run, to thoroughly grade the land so that the water can be applied with the minimum amount of trouble. In exposed positions one of the first items the intending orchardist should consider is the question of breakwinds. There are many kinds of trees that can be grown to serve this purpose, but those that will yield a return should be favorably considered. In this connection the almond, pear, loquat, and olive have proved good propositions. Having decided the system upon which your orchard is to be planted, and the position of the trees having been marked either by pegs or plough furrows, the holes should be dug. Throw out the top soil to the depth of 1 ft., then thoroughly break up the subsoil, but do not bring it to the surface. If manure is to be applied to the tree when planted, mix the manure thoroughly into the subsoil, so that the roots do not come in direct contact with, and thus prevent injury to the root system. The size of the hole will depend upon the condition of the land, and the way the land is prepared for planting. If the land was not subsoiled, the bigger the hole the better, and this will also apply to heavy soils, the idea being to give the trees a large feeding area through which the roots can easily penetrate. When planting the tree, cut off all bruised and broken roots: the roots should be spread out evenly in the hole, the centre of which has been slightly mounded, so that the roots will be in a downward direction; the strongest roots and branches should be placed in the direction of the prevailing winds to help to counteract the effects of these winds. The time of planting varies according to the weather conditions; where the rainfall is solely or mainly depended upon for growing the trees, early planting is advocated, for though the tree to all appearances is dormant, the roots grow rapidly in autumn and early winter, thus trees planted early have a good root hold upon the soil before the cold weather sets in and checks their growth; when summer returns the tree is ready to start straight into leaf and is better able to withstand the summer heat. In planting tests conducted at the State Experiment Orchards, at both Blackwood and Adelaide, the trees planted in May made several hundreds of inches of new roots in a few weeks, while those planted later did not do so well, as the ground had become cold, and root growth was not so rapid until the soiled warmed up in the spring time. In areas where the main supply of moisture is obtained by irrigation the planting, of course, will have to be delayed in many cases until the first irrigation. The treatment of wounds is worthy of more consideration than is generally given to it, for badly made and neglected cuts seriously affect the health of the tree. When a shoot or a limb has to be removed, make the cut in such a direction that it can soon be callused over. Decaying ends of shoots are a great source of danger, as they are mediums through which fungi and insect pests may enter. Wounds when made with a saw should be smoothed over with a sharp knife, and the damaged edges of the bark carefully removed. Large wounds should always be treated with some compound calculated to prevent the entry of disease. There are several compounds which can be used, but the two more commonly used, and the cheapest and most easily procured, are tar and oil lead paint; any waste paint may be used, the thicker the better, as long as it can be easily applied, as thin paint is liable to run down and damage the bark. Of the two, the paint is preferable, as the tar is likely to burn the healing collars; a good plan is for the pruner to carry a small tin of paint with him, and treat the wounds of the trees as soon as he has finished pruning it; in this way none of the cuts will be missed, as is often the case when the painting is done some time later, and decay is prevented from setting in. Great care should be taken to prevent these dressings from running down the branches, as this may cause the bark to perish. These compounds have a great advantage over wax, shellac, &c., as they adhere more closely and do not peel off after a season or two. There are many different modifications of grafting; the following methods are those commonly used:—(1) Whip and tongue; (2) bark or rind; (3) bark or rind with strap; (4) cleft. The whip and tongue method is used when the scion and stock are about the same diameter. The stock is cut with a fairly long sloping section, and then split about one-third way down the section, from the top edge; the scion is cut with a correspondingly sloping section, and is split about one-third way along the section from the lower edge. The scion is then fitted closely into the stock, taking care to see that the barks meet; the operation is completed by either binding the graft tightly with waxed cloth or with twine, and then waxing over the tie. The bark or rind graft is used where the stock is much larger than the scions; with this method the sap must be rising freely, so that the

bark will part easily from the wood. The stock is cut off with a horizontal section, and a number of slits, according to the number of scions to be placed on the limb, are made in the bark, extending from the cut surface about 1 in. downwards. The scions are then cut with long sloping sections, and are pushed into the slits in the bark and tightly bound and waxed over. The bark graft with a strap is applied to old trees where the sections made in cutting off the limbs are large; the method is similar to the preceding, with the addition of a strap. Instead of cutting the scion off with a sloping section, an inverted V-shaped cut is made, with one side much longer than the other; the short side is fixed under the bark as described, while the longer end is taken over the cut and inserted under the bark on the opposite side of the stock. Several scions are usually inserted, and the straps overlap one another; the operation is completed as before, by binding up the scions tightly and waxing over. The advantage claimed for this method is that the pieces of live wood or straps crossing the large exposed surface grow and quickly cover it over, thus helping to keep out decay. The cleft graft is often used where the stocks to be worked are of greater diameter than the scions. In this case the stock is cut off with a horizontal section, and is then split with a knife or chisel; the scions are cut to a double wedge shape, resembling the blade of a knife, sloping from top to bottom, and from front to back. This allows the stock to hold the scions firmly in position when they are inserted. The split is kept open by a wedge or chisel while the scions are inserted, taking care to see that the bark of stock and scion meet; the wedge is then withdrawn, and scions bound and waxed. The length of the scions vary with different propagators, but from two to three buds are sufficient; when cutting scions there is often an advantage in leaving a bud on the scion on the opposite side to and about half-way along the cut section; this bud often takes when the buds above fail, and consequently saves reworking when such is the case. Watch the trees carefully when the grafts start to grow, and loosen the ties as the bark expands, to prevent the growing tissue from being cut by the bands, and consequently weakening the union. The young shoots should be tied up to stakes to prevent the wind from breaking them off. A good wax may be made as follows:—Resin 4 lbs., beeswax 2 lbs., tallow 1 lb. Melt all together in a saucepan, over a covered fire; avoid boiling, taking care that the flames do not reach the mixture, as it is easily ignited. Pour the liquid into a tub of water to harden; then after well greasing the hands, work and pull the wax into a fine grain, make up into convenient rolls, and store till wanted; this wax will keep for years. The molten wax may be painted on to sheets of cloth, and the cloth can be torn into sizes as required. Narrow strips of cloth may be loosely wound around perforated bamboo, and then placed in the molten wax until saturated; these rolls are a very convenient method of keeping the wax, and it is easily applied. Cineturing the vine is applied to some varieties, to restrict for a short period the flow of elaborated sap from the leaves to the roots, to induce the more consistent setting of the berries upon the bunches. Sultanas and Gordo Blancos are sometimes treated, but is used generally upon the Zante currant. The cineture consists of removing a complete narrow strip, about one-twelfth of an inch in width, from around the stem, main arms, or even canes of the vine, when the corollas, or what are commonly called cups, are falling from the blossoms. The early healing of this wound is practically essential to the vine, so that the actual circulation of sap can be resumed at an early date. Some growers claim good results by a single incision made either with a sharp or even a notched knife as deep as the sap layer. To insure a rapid healing of the wound it is protected from the sun and air by tying strips of cloth around the cineture; better results are obtained by waxed cloth."

McNAMARA BORE.

September 2nd.—Present eight members and six visitors.

BEST MEANS OF DEALING WITH THE RABBIT PEST.—In dealing with this subject Mr. E. G. Bicknell drew attention to the way in which rabbits were increasing in that district, and urged members to take steps to keep them in check. He thought the best method of destroying them was by trapping, as one could then save the skins, which at present realised a good price. One should commence trapping about the beginning of April, before they started breeding. The next best method was by fumigating. Firing the charge made it more deadly, and it acted much more quickly. He did not recommend digging out the burrows, as the expense in that

sandy district would be too great. He did not favor the use of poisons other than poisoned wheat. If arsenic or strychnine were used the poison was dangerous in the case of cattle chewing the bones of the dead rabbits, as they would still contain the poison. The first cost was the only cost in trapping. If good traps were purchased and well looked after they would last a number of years. With fumigating and poisoning one had the expense of buying material, besides the initial outlay in the purchase of a machine. Mr. Ling had used carbon bisulphide on cotton waste, and in one instance had dug out an unopened burrow on the day following the use of carbon, and had obtained seven live rabbits. Other members thought carbon, to be effective, must be pumped into the burrow by means of a proper fumigator. Mr. Wilford and Mr. Sanders had obtained good results by soaking cotton rag in strips in melted sulphur. Sulphur could be melted in any old pot. These strips were lit, and the burrow filled up after they had been placed therein with the aid of a stick. The burrows were rarely opened after that treatment. Mr. Sanders had also attached a gellignite fuse and cap to a live rabbit and let him go into a burrow. He made for the centre, and the explosion destroyed entirely the burrow and its occupants.

MONARTO SOUTH (Average annual rainfall, 14in. to 15in.).

September 1st.—Present: 14 members and two visitors.

POULTRY.—Mr. J. Daly contributed a short paper on this subject, and said that he considered poultry were a good side line to have on the farm. They should be fed morning and evening, and a good supply of clean fresh water kept in a shady place. If their wheat ration was thrown on a litter of straw it would help to make the birds active and keep them in good condition. A good warm roost, kept free from vermin, should be provided. Every farmer should keep about 100 hens, and rear enough chickens to replace the old birds that did not lay. He favored the White Leghorn breed.

HAY-GROWING.—In a paper on this question Mr. B. Schenscher said that early wheats such as Gluyas, Golden Drop, and King's Early should be sown for hay crops. Care should be taken not to cut the hay too green. Ten days was quite long enough to leave the hay in the stook before carting into the stack. He did not think it advisable at present to cut too much hay, as there was a likelihood of it being damaged by mice.

PARRAKIE (Average annual rainfall, 16in. to 17in.).

August 25th.—Present: 12 members and two visitors.

BEST METHOD OF ROLLING YOUNG SCRUB.—In the course of a short paper on this subject Mr. A. J. Beelitz said that he had found that by using the scrub roller one would obtain good results, and to save the work and expense of cutting the spring-backs, they should be logged the opposite way a day or so after the land had been rolled. The logging should be done with two railway rails about 20ft. long, one working about 2ft. behind the other. A 4ft. chain or bar should be put about 4ft. from each end of the front rail, and three horses yoked on to each bar. A chain of that length would leave the full weight of the rails on the mallee, which would pull off the shoots lying in the opposite direction. If good burning winds did not occur an ordinary firerake should be used, and if the tines were bent under the rake enough sticks would be picked up to hold the fire. Mr. M. J. Cooney discussed the paper, and thought it was better to use a scrub rake and burn the sticks in rows.

RAMCO.

July.—Present: 14 members.

MOST CONVENIENT SIZE OF BLOCK FOR ONE MAN TO WORK.—In the course of a paper dealing with this subject Mr. G. Rogers considered 10 acres of land could be worked by one man and a horse with the necessary implements. Not only should one be able to make a good living on a block of that size but one should also be able to make sufficient to start another member of the family in a like manner. In planting an orchard one should do so not only with the idea of selling to local

buyers, but with a view of extending the export trade, and the first essential in that direction was quality. Some growers thought that if the fruit was dry enough to pack, that was sufficient. That was not so, the fruit should be dried to a standard that would keep it for an indefinite period. If possible one should have headlands running parallel with the channel, and vines planted 18ft. from the channel, and trees 20ft. He would plant three acres of oranges, two acres of lemons, one acre of apricots; the remaining portion of land could be used for the house, drying ground, lucerne, mixed trees, &c. The vines, with good attention, should return about 10 tons of dried fruit, and although apricots varied a good deal, he thought one should average three-quarters of a ton per acre. In discussing the paper, members generally agreed with the views of the writer.

RENMARK (Average annual rainfall, 10.93in.).

September 6th.—Present: 27 members and one visitor.

HORSEWORKS AND IMPLEMENTS.—In an address dealing with this subject, Mr. F. J. Olorenshaw said the most necessary implement on a 10 acre block was a single furrow plough, and other important implements included a single cultivator, single harrow, and a horse hoe. He was not in favor of ploughing to the centre of the rows, as that elevated the land to an excessive degree. When ploughing was finished it was advisable to cultivate and then harrow the land about one week later. He had obtained good results by using the single harrow, as it reduced the soil to a nice fine tilth. When the land had been watered four times it should be turned back from the centre towards the vines. On one block it had taken him three years before he was able to get the water over the middle of the ground between the rows. He did not think one could get the best results from the use of the disc when used solely for the purpose of cultivating, as it did not kill all the weeds. After the disc was worked it was a good plan to follow with the cultivator and then the harrows. Where the land was very dirty he had used the cultivator a week or so before watering. With two good horses and a skim plough cutting 3ft. 6in. one should be able to cultivate 5 acres a day. Experience had shown him that best results would be obtained if the horse hoe were used after watering. In furrowing out he used the busters, as they made good furrows if the land had been well worked. With the plough furrow, the soil was liable to be washed away. Where there were only three or four waterings in the season it was advisable to get the water well down, and for that reason, he made a point of furrowing out instead of flooding. After loose hoeing, he threw a good strong furrow back towards the vines, because when the soil had been pulled away one got very close to the roots and there was a danger of injuring them, and by the end of the season the land could be thrown back towards the centre of the vines. If the mould boards of the plough were kept free of earth a much better job would be done. The same should also apply to the cultivator tines. He preferred the use of a narrow tine in stiff soil, whilst 3in. tines could be worked in sandy country. There were several different ways of cultivating trees, and where one could do a 10 acre block on the wide way, only six or seven acres could be done on the narrow, because of having to turn in and around the trees. Referring to the wearing of the bearings in certain implements, the speaker said he had used red gum with excellent results.

WILKAWATT (Average annual rainfall, 16in. to 17in.).

July 28th.—Present: 11 members.

PIG-RAISING.—In a paper with this title Mr. W. R. Neville said the pig was an almost indispensable animal on the farm, and when starting it would always pay one to purchase the best. In selecting the sow it was advisable to get one from a large litter, and she should have at least 12 teats. A good Crossbred could be obtained by mating a Berkshire sow with a Tamworth hog, and the progeny of these mated with a Mid York hog, would give a first-class bacon pig. The young sows should not be mated before seven or eight months old, and after mating they

should have a good big yard or paddock to run in in order to get plenty of exercise. The farrowing pen should have rails round the walls about 8in. high and 9in. away from the wall so that the young ones could get out of the way when the sow was lying down. After farrowing the sow should be kept quiet; she would not require feeding for the first 12 hours or so, and then only sparingly on a swill of pollard and bran. Care should be exercised that the sow did not become costive, or the young ones would become the same, and to avoid that he had found a small amount of green lucerne daily was very effective. The young boars should be castrated at four weeks old, and kept on the milk until six weeks of age. For the first few days after weaning they should be fed three or four times a day, or they might go back. Should any food be left in the trough it should be cleaned out before fresh food was put in. When their appetites improved a ration of lucerne made a splendid meal in the middle of the day; it was also a good tonic. The farmer's aim should be not to let the young ones lose their baby appearance, and to obtain that regularity in development, feeding came foremost. He would not give more food than could be cleaned up at a meal. Charcoal should be given once or twice a week. At six months old the young ones should weigh 120lbs. to 150lbs. dressed.

WYNARKA.

August 4th.—Present: 12 members.

PIGS ON THE FARM.—In a paper dealing with this subject Mr. G. G. Pitt said that at the present time the keeping of pigs was more in favor than it had been for some time, that being due to the shortage of both cattle and sheep. The chief reason for the pig industry being practically at a standstill was that South Australia had not developed an export trade in bacon, ham, and pork. The lamb industry was very unremunerative until the Government gave assistance in establishing an export trade, and it has made wonderful strides since. The average yearly imports of cured pork into Great Britain for the five years previous to the war was about 300,000 tons, at an average value of over 18½ million pounds, while in 1913 the Commonwealth exported about 825 tons of bacon and ham, valued at about £74,000. Of that total South Australia only contributed pork to the value of £22. The price realised for cured pork in England during the five years mentioned was about 7d. to 8d. per lb., and the freight from Australia to England prior to the war was 8d. per lb. Prices were regulated by supply and demand, so that without an export trade pigs must fall in price as soon as the production rose above the local requirements. At the present time, when there was so much waste wheat in the State, and the price of meat was high, pigs would be profitable until the supply exceeded the local demand. There was a diversity of opinion as to the best breed of pigs to keep, but most people seemed to favor the Berkshire and Mid York. An objection to the Mid York was that it scalded very easily in the hot weather, but with attention that could be overcome by occasionally rubbing a little grease on the back. The sows should be the best one was able to procure, but in no case should any but a pure-bred bear be used. Some people thought that any place was good enough in which to keep pigs, and that any rubbish was good enough to feed them on. Pigs should have yards to run in, with good shelter from wind and rain, and with plenty of straw for bedding, which would help to keep their sties clean. He considered that every farm should have a few pigs to eat by-products such as screenings, heads, skim milk, and greens from the vegetable garden. Green feed was essential to the good health of the pigs. Lucerne and kale could also be grown for them to advantage. Before feeding mouldy wheat or smutty screenings to pigs it should be well washed. That could be easily done by putting it in a bucket with plenty of water and stirring well. The rubbish could then be poured off. Sucking pigs should be encouraged to eat as soon as possible, and have a corner fenced off with a creep hole for them so that they could have skim milk, or, failing that, thin pollard gruel without being molested by their mother or other pigs. It was also very important that mothers while feeding the litter and young weaners should have abundance of food, or they would never develop into good pigs. Care should be taken to see that the animals were free from vermin and diseases. A supply of charcoal would help to keep them in good health. He also quoted various statistics and a portion of the speech of the Minister of Agriculture at the recent Conference of Dairy Factories.

BERBI, August 29th.—The subject for the meeting was "Spraying," and a discussion was initiated by the Hon. Secretary (Mr. W. R. Lewis). Mr. Savage gave some interesting records of tests that had been carried out at Blackwood. Mr. Arndt gave an account of his experiences with red spraying oil on citrus trees.

CLANFIELD, September.—Mr. L. Ormell read a paper on "The Co-operative Purchasing of a Bull," and the delegates who attended the Pinnaroo Conference tendered their report on the proceedings.

GERANIUM.—The reports of the delegates to the Pinnaroo Conference were received and discussed.

MINDARIE, September 4th.—Mr. Payne contributed a paper on "Mice on the Farm, and How to Combat Them." The paper was freely discussed, members generally agreeing with the views expressed by the writer.

MYPOLOGA, August 29th.—Mr. H. J. Apps (Assistant Dairy Expert) visited the Branch and delivered an address.

NETHERTON, August 31st.—The meeting took the form of a question box evening, when various subjects of interest were discussed.

POMPOOTA, August 2nd.—The Dairy Expert (Mr. P. H. Suter) attended the meeting and delivered an address on "The Care of Cream and Buttermaking." Also a meeting was held on September 4th, when a lecture on "Foaling and Calving" was given by the Veterinary Lecturer (Mr. F. E. Place). On September 19th an illustrated lantern lecture was given by Inspector Lindsay (Central Board of Health) on "Sanitation on the Farm."

WILKAWATT, September.—The report of the delegates to the conference at Pinnaroo was discussed, and also the papers that had been read.

WOLOWA, August 29th.—The meeting took the form of an inspection of the crops of members in the western district. A question box was held during the evening when a fair number of questions were discussed.

WYNARKA, September 1st.—At a meeting of the Branch it was decided that donations from members' crops should be given to the Wounded Soldiers' Fund.

SOUTH AND HILLS DISTRICT.

BLACKWOOD (Average annual rainfall, 27in. to 29in.)

Present: 10 members and one visitor.

THE OLIVE AND ITS USES.—The Acting Manager of the Government Orchard (Mr. C. H. Beaumont), in a paper on this subject said: "I do not propose to go into the history of the olive—suffice it to say that it has been known and made use of in ancient times as a valuable timber and as a food, more particularly in the lands which bound the Mediterranean Sea, and it is from these countries, and perhaps more particularly from Palestine, that the olive tree has come to us. The principal producers of the olive to-day are Italy, Spain, Algeria, Greece, and Turkey. Italy has over 4,000,000 acres, and Turkey has over 1,000,000 acres, while South Australia has about 1,000 acres. South Australia grows more olives than all the other States of the Commonwealth combined, so that as far as Australia is concerned the olive industry is in a very small way indeed. From my own experience I should say that a large percentage of the olives of South Australia are seedlings. The olive is the same as most of the deciduous fruits in that the seed does not come true to the parent stock, but is more or less worthless—in fact, it has been demonstrated that only about half per cent. of seedling olives have any commercial value. The originals of our best types of trees were probably selected seedlings, but the better methods of getting desirable varieties are by grafting or budding or by layers or by cuttings, of which there are two parts used—the soft tips and the hard wood of the bigger branches, generally known as truncheons. Budding

may be done any time when the sap is flowing freely, and either a single bud or a twig with several buds may be used in the ordinary way, and the new growth must be cared for as attentively as is necessary in other fruits. Budding the olive is not so easily done as other fruits; the bark does not lift so readily, and does not heal quickly, hence budding is not often carried out. In like manner and for the same reason grafting is not very successful, though in certain cases is well worth trying—that is where there are well-grown trees which do not bear, or else bear fruit of an inferior quality, and in such a case I would advise grafting only a section of the tree in one season. Most of the olive trees are raised from cuttings. Layering is more certain, but is too costly and takes too long. The planting of cuttings of the soft tips seems to be coming more and more into favor, and is simple and fairly effective; the cuttings go into small space, and are planted much as we do the vine cuttings. As a general rule the tops of growing shoots are cut off about 4 in. in length, just when the wood is passing from the soft state to the fibrous. The tips should be cut just below a node, and the lower pair of leaves should be removed. They should be planted in a shady spot—a shadehouse is best—in fine sandy soil, and be kept constantly moist. When the roots start, transplant into small pots, and from them into their position in the grove when about one year old. To root 10 per cent. of these cuttings must be considered a fair return. There is no doubt but that the truncheons are the best if they can be procured. These truncheons should be made in winter, and may be from 1 in. to 3 in. in diameter. Remove any of the twigs and cut into lengths of about 15 in.; the actual cutting may be done with a sharp axe on a solid block, care being taken not to split or to splinter the ends. There are several ways of dealing with these truncheons. By some growers they are tied into bundles and buried in horizontal position about 1 ft. deep in damp soil, but it must be well drained; then in early spring they are planted in rows in a slanting position, with one end 3 in. or 4 in. out of the soil. The soil is then ridged up so as just to cover the ends. Irrigation between the rows is essential during the first summer; during the second year any shoots not required are removed, and only those kept which will form the tree; they are then ready for planting out. The opinion of some of our growers—and I fully agree with them—is that the truncheon should be planted in its intended position in the grove, in a horizontal position, at least 6 in. deep, and in ground that has had a good shaking up with an explosive, and if thought necessary a few buckets of water may be used in the summer towards the end of the season. The olive will grow practically everywhere; of course it will thrive best in a good rich, free soil, with clay under, but with variation of treatment it will do well under almost any circumstance—for instance, they are now planted in some of the most arid parts of America, and I have seen olives in parts of Australia where it was almost impossible to grow anything else. Cultivation and irrigation must lend a hand when the natural facilities are not sufficient; perhaps that is all I need say about cultivation. It is well to keep the weeds down in the early stages of the tree; rabbits and hares must be kept out, but whether the soil requires ploughing and working will greatly depend on the situation and the rainfall after the trees have a fair start. Light soil and scanty rainfall will mean that cultivation is certainly necessary. It has often been asserted that the olive will not thrive unless it is within 50 miles of the sea, but that is one of the myths of the past. The trees are not quick growing, and will be at least 10 years old before they will bear any quantity. The pruning of the olive is carried out at first, as is usual with other trees, namely, to obtain a good base or form or shape, as you may desire to call it. The tree should not be permitted to become dense and bushy. The olive bears upon the wood which grew the preceding year, and upon no other, therefore to encourage the growth of new twigs along the heavier limbs must be the pruner's endeavor, but care must be taken not to allow a dense growth, as any tree which has not a free circulation of light and air cannot bear fruit. At the same time care should be taken in thinning out a tree not to expose the bigger limbs to the direct rays of the sun; if you do the bark will burn, and the limb will die. As far as disease goes, the olive is a very hardy tree, and is not easily injured, but its greatest scourge is the olive scale, which undoubtedly spoils the beauty and usefulness of the tree, but it is easily dealt with, and I think it is to be regretted that trees, even within the parks of Adelaide, are allowed to go uncared for, and thus to spread the trouble far and wide. On the secretions from the olive scale, the "sooty fungus" which we are all so familiar with, exists. Unfortunately this scale and the fungus frequently attack other fruits and flowering

shrubs. An occasional spraying with kerosine soap wash will clean the trees effectively. The curculio beetle is fond of the olive, but it may be checked with arsenate of lead 1lb. to 5galls. to 10galls. of water. And now a little about the produce. It seems passing strange that though everyone is agreed that only certain varieties of apples, pears, plums, and other fruits are of commercial use, they think that any old olive is quite all right. They have not gripped the fact that only a few varieties of the olive are worth planting. We have 45 varieties at Blackwood, but it remains to be seen how many are of value. It is not necessary to go into the question of the picking of the fruits; machines have been tried, but a man who means business is the best when it comes to picking olives. One firm in Adelaide has over 100 adults picking olives this year; that in itself is enough to show that it is profitable. I would sooner pick olives than cherries any day. The price, at 13s. 6d. per cwt., should pay handsomely if you have good trees, well cared for. The main product of the olive is olive oil, and it is beyond the scope of the present paper to go into the details and mysteries of its production. One ton of olives should yield 35galls. to 45galls. of oil. A grove of 14 acres of trees, now 30 years old, has averaged 450cwts. of olives per acre for 20 years, the annual yield varying of course with the seasons. Simply let me tell you that the olives are crushed thoroughly so as to free all the oil contained, the crushed product is placed in mats of esparto grass, and subjected to pressure, say about 300lbs. The mass is then broken up, and warm water added, and is again pressed, perhaps three or four times, and up to a pressure of 1,000lbs. The oil and water are separated as soon as possible after being released, and the oil is either filtered or allowed to settle, according to the method adopted at the various factories. Our consumption of oil is at present about 60,000galls., and we produce about 14,000galls., so there is room for improvement, and when we allow for the further fact that we import about 300,000galls. of cheap cotton seed and colza oil, we will find even a greater reason for extending the culture of the olive. Then there is the preparation of the ripe olive as a food, and the green olive as an appetizer. Here again is great scope for enterprise. Olive oil is a powerful food, and is a splendid substitute for animal fat, and has practically no waste. There is nothing better for the frying of foods. It is a fine preservative; we are all acquainted with its use in tinning fish, &c. As a medicine it is most useful, either internally or externally; it will heal cuts and prevent chapping; it is a true remedy for constipation; it is of great assistance to anaemic people in forming new blood, and has been strongly recommended as a food to persons suffering from diabetes, who are not able to assimilate starchy foods; in fact, olive oil and ripe olives are invaluable, though little understood adjuncts to health, and when the price charged is reduced to something within reason, there is no doubt they will come into general use. Of the pickling or curing of olives I do not now intend to speak, though I will be glad of an opportunity at a later date, but I hope that I have said enough to cause you to take more interest in the cultivation of the olive." Samples of green and ripe pickled olives and olive oil were on the table, and on the recommendation of the writer of the paper, and after a little persuasion, were freely tested by many who had never tasted them before.

BLACKHEATH.

September.—Present: 11 members and three visitors.

SHEARING OPERATIONS.—Mr. W. Pym in a paper on this subject said that a well-lighted, roomy shearing shed should be chosen. The shearer should be a man well acquainted with his work. The wool when picked up should be placed on the sorting table—one that the sorter could walk around. When classing it was essential that all wet, stained, and greasy wool should be picked out, otherwise it would make a big difference in the value of the wool. He urged members to dip their sheep, as it would destroy the tick and improve the value of the wool. The Hon. Secretary (Mr. R. W. Rolland) read a paper from the Kanmantoo Branch on "Co-operative Shearing."

CYGNET RIVER.

August 30th.—Present: five members.

MANURE.—In a short paper dealing with this subject Mr. J. J. Osterstock thought that the best method of handling farm manure was to have a pit into

which the manure from the stables, fowlhouses, and pigsties could be put. This manure could be used on the vegetable garden, and would also save the expense of using super. A pit of that description would abolish the refuse heap too often noticed on many farms. Mr. Noske considered that such manure would be a valuable asset to the farm. Mr. Osterstock favored an enclosure above the ground, as that would enable one to load on to a dray much more easily. Mr. W. Miller also discussed the paper, but said he preferred to keep the ashes, as they made a good dust bath for the fowls.

MORPHETT VALE (Average annual rainfall, 23.32in.).

August 25th.—Present: eight members and one visitor.

LUCERNE CULTIVATION.—In a paper on this subject Mr. J. Castle said that after having conducted an experimental plot on his farm he was convinced that that district was suited for the growing of lucerne. The rainfall was good, and on most farms suitable water could be obtained for irrigation purposes. He felt certain that it would add to the productive value on every farm where it was possible to cultivate, but more so on smaller farms, as it would assist in increasing their stock-carrying capacity, and overcome many of the difficulties so often experienced of carrying dairy stock over abnormally dry periods. Under favorable conditions it would yield equal to 15 tons per acre, the greater portion of that feeding value being returned when the farm was destitute of flesh and fat producing fodder. There might be ample dry grasses on the farm, also hay and corn, but none of those would return the same quantities of milk and butter as lucerne. Horses, pigs, and poultry also did better during the dry period of the year upon a liberal diet in conjunction with their other feed. The condition of the soil was the best factor to determine when it should be sown. The best position for the crop was in low-lying land of good heavy loam, on which a good supply of well-rotted manure had been deeply ploughed. If the soil was of a deep, heavy character the subsoiler should be used at the first ploughing. The soil should be well worked to reduce it to as fine a condition as possible, also to destroy any weeds. Lucerne being a deep-rooting plant, passed through dry seasons without serious results, so that it was time well spent to have the land in the best possible condition before sowing, as that assisted a strong germination, and allowed the young plants an opportunity to become well established before the weeds started. He preferred early ploughing, with continuous working with harrows and cultivator until a favorable opportunity offered for sowing. He had obtained best results from September sowing, as the weather was warmer, and helped the young plants to make more rapid growth. There was not the same difficulty with weeds such as occurred if sown early, and if irrigation was available it would be possible to have several cuts the first summer. That of course was largely determined by the season, and also treatment received. An acre or two of well-worked land, with the lucerne well established, would amply repay for all the extra labor involved, as it would produce much more fodder than a larger area carelessly cultivated; and again, being but a small block to work, it could often be done without interference with other work, a spare hour or two being sufficient after the first heavy ploughing. If no drill with a device for distributing small seed was available, the manure could be drilled in and the lucerne sown broadcast, the greater portion of which would work into the drill furrows, which should be lightly harrowed and rolled. The soil should be in good working condition, and not wet on the surface. Every care was essential to establish a vigorous growth when planted, after which, with reasonable attention, the greatest energy would be required to gather the product. Lucerne could also be used with good results for feeding pigs and poultry in the summer months. Pigs were very fond of the young fresh-cut fodder, and for poultry it was chaffed and mixed with bran and pollard with satisfactory results. Horses relished it, and its effect on them was beneficial, while sheep could be safely carried over their lambing period during late seasons if lucerne was available for them, and then if the supply was greater than required it could be turned into hay.

URAILLA AND SUMMERTOWN (Average annual rainfall, 44.35in.).

Present: 13 members and one visitor.

THE CULTIVATION OF THE BLACKBERRY.—In a paper dealing with this subject Mr. G. Blackwell said the climate of the hills was similar in many respects to portions

of California, where the berry was grown and cultivated extensively. Blackberries should be planted in rows far enough apart to admit of the use of the horse and cultivator. As the constant tendency of the plant was to extend itself, the rows should not be less than 6ft. to 8ft. apart, and the plants 3ft. apart in the rows. The plants would soon occupy the full space. Cultivation would then only be possible between the rows. Thorough cultivation of the soil was essential for the retention of moisture. After the plants were grown to a fair size the land should be cultivated with shallow-cutting tools in order to obviate injury to the roots, which, if that were done, not only weakened the plant, but increased the growth of suckers between the rows. A horse hoe with a long knife running horizontally, or with duck-foot tooth well sharpened, kept the ground clear of weeds and suckers, and the surface loose. Frequency of cultivation should depend upon irrigation, for the cultivator should always follow the application of water. The spaces in the rows which could not be reached with the cultivator should be kept clean, and the soil loose by the use of the hoe. It was advisable that the cultivation should be as clean as possible, for moisture-exhaustion by weeds could not be afforded. In the case of the pruning of the canes, if no supports were used, the canes were headed lower. At planting out he would cut back the cane close to the surface of the ground, and mark the plant with a small stake. At first the top growth should not be checked, but when new canes grew out strongly they should be pinched at the tip to force out lateral branches for fruiting the next year. If it was intended to train the canes on to a trellis they should be allowed to grow to a height of 5ft. or 6ft. before the terminal bud was pinched off. It was the general practice to take off the ends of the lateral branches about 12in. from the main stem. The pinching of the canes might be done by hand, but thrifty plants were such rapid growers that in large plantations the cutting back was often done with a sickle or corn hook, or a sharp butcher's knife several times during the summer. If support were used the canes that were left were gathered within a loose drawn rope, and tied to the stake, or if a trellis were used the branches were brought up to the wire, so that the distance was easily divided between the shoots. Though those systematic methods of summer pruning were practised and advocated by the most careful growers, it should be stated that there were large plantations that were conducted on a more simple system. The pruning consisted of simply cutting out old canes in the winter, and in summer by slashing off those canes that interfered with cultivation. After the canes fell those that had borne fruit during the summer were all cut off even with the surface of the ground, and all debris removed from the rows. If the plants were well treated the first year after planting out they would have considerable fruit the next summer. The useful life of the plant depended mainly on the treatment that it received, but after eight years of service some growers took the plants out and gave the land a change. Comparatively few kinds were largely grown. The Wilson Junior and Lawton were formerly the prevailing varieties, ripening in the order named. The Eric was favored as a middle season fruit. The Early Harvest has been favorably reported on by a number of growers. The most popular kind, however, was Crandall's Early, which was a strong, vigorous, hardy plant, very productive, and had a very long fruiting season. Efforts have been made to secure varieties of the Californian native berry, and a most striking result has been secured by crossing the wild berry with Crandall's Early, producing a fruit so large that it has been named the "Mammoth." The method by which fruiting for six months with Crandall's Early could be obtained was described by a Californian grower as follows:—Briars 18in. to 24in. tall, with good root systems, were set in finely pulverised soil to the same depth as before—4ft. apart in rows 8ft. apart. The first year they required no pruning; the space between the rows was occupied by cabbages, beans, corn, potatoes, &c. In the second year three or four new canes came up. When these were 4ft. high 6in. should be cut off, when laterals would start from the leaf axis. The same laterals would bear the main crop in their second year, besides sending out new laterals near the base of the old ones about the time the berries were set. The new laterals would bear the second crop, which came on about the time the first crop was gone. The third crop, borne on the new canes, which have been cut back meanwhile to 3ft. 6in., blossomed from August to freezing, and the berries ripened from September. A method which aimed at economy in getting a main crop, without providing for succession, was as follows. The blackberries were not trellised, but the old canes were left in a hedge-row to support the new growth, and on the day before berry picking, all protruding new growth was cut back as close as possible to the blanket of bearing canes which

covered the mat of dead canes. That removed all hindrance to picking. There should be no stubs of new wood left above the bearing vines, as it raised the general level of bearing wood in a year or two so high that pickers could not reach up and half-way across the row. When picking was over both sides of the hedge row were trimmed off clean until only 2ft. wide. New growth soon covered the hedge, and it would be ready for a crop next year with the berries outside and handy to pickers. Every six years the hedge should be trimmed back to a height of 2ft., and all canes over a year old cleared out.

URAILDA AND SUMMERTOWN (Average annual rainfall, 44.35in.).

September 3rd.—Present: 15 members.

THE GROWING AND SAVING OF GARDEN SEED.—In a paper dealing with this subject Mr. R. N. Cobblestick said it was very necessary for a gardener to secure good seed, as that was the foundation of having good crops. In order to procure cabbage seed it was necessary to select the plants and place a stick alongside each before they were cut, as in that way one could obtain a more even variety. When the cabbages were cut the stumps should be replanted in a piece of ground well manured with bonedust, and have a good supply of water. They should not be planted too near other varieties, as insects would cross-fertilize them. The tops of the flowers should be nipped off to throw the strength of the plant into the remaining seedpods. Care should also be taken to protect the seed from the ravages of birds. When gathering the seed too many seeds should not be placed in one bag, as if that were done they would be liable to sweat. That applied to the harvesting of all classes of seeds. When the seeds were properly ripened a nice warm day should be chosen for cleaning them. If the seeds were kept in tins it was a good plan to punch a few holes in the lid and have the tin labelled with the name of the variety of seed that it contained. Carrots should be transplanted 18in. apart, so that a stake could be put down and four plants tied to the one stake. It was advisable to cut off the root of the plant before planting in order that they would take root better. The seed should be gathered in the morning or the evening when the sun was not too hot, as they did not shake out so easily. The seed could be placed in bags and then cleaned on a dry warm day, and then finally stored in smaller marked bags. Practically the same process applied to parsnips. It was well to plant onion seed as early as possible on account of the difficulty in getting the seed to ripen in the cold climate of the hills. A good plan was to dry the seed well and then rub it through a fine sieve. To make the seed still cleaner, if it was placed in water it would be found that the good seed would sink to the bottom of the bucket and the rubbish would float on the surface of the water. Beetroot seed could be grown in the hills if it was planted early, but it took rather long to ripen and clean. Lettuces were not easily ripened off, and while good seed could be procured at a reasonable cost he would not recommend gardeners growing their own. The same could be said of radishes. Turnip seeds were among the easiest to grow and clean, the only trouble being that one should take care to have the plants protected from the birds. In cultivating swede seeds it should be seen that they were planted a good distance from cabbage plants, or insects would spoil them by cross-fertilization.

CHERRY GARDENS, August 28th.—Mr. D. M. Eicks read an extract from the *Journal* entitled "Sanitation on the Farm," which caused a good discussion. Members especially agreeing with the necessity for cleanliness in the handling of milk and cream, as pointed out in the paper.

INMAN VALLEY, September.—The meeting took the form of a discussion on local sheep troubles, and the secretary read several extracts from the *Journal* dealing with veterinary inquiries.

KANMANTOO, August 25th.—Mr. W. G. Mills contributed a paper on co-operative shearing, in which he suggested that farmers in that district should co-operate, as that would enable them to get their shearing done at less cost, and much sooner.

LONGWOOD, August 25th.—The meeting was held at Mr. J. B. Coles' home-
stead, and took the form of a pruning demonstration.

MACGILLIVRAY, August 30th.—Annual Meeting.—After the business of the Branch had been conducted the meeting took the form of a social evening, supper being provided by the ladies.

MILANG, August 11th.—Mr. D. H. Griffin contributed a paper on "Farm Book-keeping and Finance," which caused a good discussion.

SOUTH-EAST DISTRICT.

COONAWARRA.

August 28th.—Present: 10 members and seven visitors.

SUMMER CROPS.—In the course of a paper dealing with this question Mr. L. C. Stapleton said the growing of summer crops did not receive the consideration it should in that district, which was eminently suitable. It had the advantage of rich soil, and of good rainfall; added to that the very shallow underground water should materially assist in supplying moisture to the surface soil. These crops served at least a twofold purpose. In the first place, if put in well, and during an ordinary season, they would produce a heavy yield of fodder or other produce. In the second place, if the soil was properly cultivated it would form a perfect fallow which only required to be cultivated once, after the crop was off, before being seeded to cereals; from which a heavy yield was almost certain. Further, in his opinion, fallows so treated were better than bare fallows, for the reason that if they wanted clean fallow they should work the land during the summer and early autumn. That had to be done in the dry areas, where conservation of moisture was the main object. If that was not done the Scotch thistles would probably increase, besides other weeds getting a good start. Therefore one should cultivate to keep down weeds, and in so doing conserve moisture. The principal factor to be borne in mind in the growing of summer crops was that they were endeavoring to grow heavy-yielding crops during that part of the year when the rainfall was the least and evaporation was greatest. Therefore it was necessary to start preparation of the ground before the dry weather was expected. To make sure of a good crop the ground should be well ploughed, and then harrowed before the wet season was likely to be quite over; and then when the drier weather came the surface should never be allowed to remain hard or caked. The best plan was to give the ground a second ploughing before seeding time. That ensured a proper pulverizing of the soil to the full depth of the ploughing, and if harrowed immediately would do nearly all the work necessary for the preparation of the ground. As all summer crops required plenty of heat for their proper development, it was not wise to plant when there was a probability of much cold weather after the seeding. He thought early November was quite soon enough for the good of the crops. If the soil was well firmed below, and loose and fine on top, the drill would place the seed in the moist soil, where it would germinate and keep growing without rain; but of course more or less rain was wanted to produce good crops. If any but the smallest of the seeds, such as millet, did not germinate and grow without rain to start them, then the ground was not fit to put into crop. As for the smaller seeds, which should not be drilled in deeply, rain would very likely fall in November to start them. In consideration of the fact that at best there was only a limited supply of moisture available for the crop during the summer and early autumn, it was absolutely necessary to give the plants plenty of room that they could develop properly. One stool of maize well grown, well cobbed, and succulent was worth 20 thin stalked, cobless plants with withered foliage. He thought that one could hardly err on the side of thin sowing, for unirrigated crops, provided the plants were fairly evenly spaced. After the ground was seeded it was very important that the ground should be kept in a good condition on the surface. The soil gave up its moisture to the plants and lost it by evaporation, and if not stirred to fill the cracks that formed the heated air circulated therein and dried up the soil more rapidly than before. One did not, however, have to wait until the cracks showed on the surface where the soil was dry

and loose, because the cracks had started below before they showed on the surface. Loose, dry soil did not crack on its own account, and the more frequently the soil was stirred the better. He had grown some summer crop every year, but had never been able to cultivate a growing crop as it should be done, and had sometimes got very good crops, even when they had never been cultivated after seeding; but that was only due to very favorable conditions; and made one wonder what crops could be produced were the best practice followed. He had grown maize, sorghum, broom corn, and a few other fodders in a small way, but thought maize the most satisfactory crop to grow and handle, and the best general purpose crop. At the present price of broom fibre broom corn should be payable. It appeared to do well there, and was about the hardiest of that kind of crop.

GLENCOE (Average annual rainfall, 33.84in.).

July 5th.—Present: 16 members.

ANNUAL MEETING.—The Hon. Secretary (Mr. G. F. Ferguson) presented the annual report, which showed that 11 meetings had been held, and interesting papers contributed at each meeting. The attendance had been good, and the membership almost doubled. The election of officers for the coming year followed.

GLENCOE (Average annual rainfall, 33.84in.).

August 2nd.—Present: 14 members.

THE PRODUCER.—In a paper on this subject Mr. J. T. Halliday said it should be the aim of every farmer to produce as much as possible during the present times, and to produce articles of the best quality. The many advantages to be derived from attending the meetings of the Agricultural Bureau helped the farmer in no small manner to successfully handle his crops and stock. The Bureau gave the members an opportunity of meeting and discussing items of mutual interest. The various experts of the Department were always only too pleased and willing to give members their advice on any question on which they might seek information. Mr. J. Dow discussed the paper and spoke in high terms of the Bureau, and especially of the advantages that the younger members received by attending its meetings.

KONGORONG.

August 28th.—Present: 10 members.

Mr. A. C. Gust initiated a discussion on the growing of rape. In answer to a question from Mr. S. Dixon as to what was the best time for sowing, a member replied that the seed should be sown about September, and about 3lbs. of seed to the acre used. Mr. Gust did not advise sowing mustard with rape for the summer months, as the stock were not very fond of it. The rape was sown with super, but care should be taken not to leave the seed in the manure over night, as it would destroy germination. The seed should also be drilled in as shallow as possible.

KYBYBOLITE (Average annual rainfall, 22in.).

August 30th.—Present: Eight members.

POULTRY.—In a paper under this heading Mr. F. C. Lacey said that poultry should be raised in that district with a view to egg production rather than with the idea of rearing birds for the table, as the freight was too expensive to enable them to market live birds profitably. White Leghorns were recognised as the best breed of fowls for laying purposes. The incubator should be set so that the chicks would hatch between the months of May and September. In order to keep up the number of laying hens it was necessary to hatch about 200 chicks per season—that would be allowing for 50 per cent. cockerels. The pullets should commence laying about March, and with proper feeding should keep laying all through the winter, when eggs were bringing good prices. A good winter mash could be made consisting of three parts pollard to one of bran, mixed with water

in which rabbits and other meat had been boiled. Boiled meat and green feed could be fed at midday and grain at night. It was essential that the eggs should be gathered at least twice a day, and if possible sent to market twice a week. In reply to a question Mr. Lacey said he had not found it necessary to chaff the green feed, and if the birds were getting too fat it was a good plan to put the grain amongst some straw, as that gave them exercise and would help to keep them in good condition. Mr. Shepherd said fowls did better in sandy country than in heavy wet soils such as were to be found in some parts of that district.

FRANCES, September 6th.—ANNUAL MEETING.—The Hon. Secretary (Mr. A. M. Herold) read the annual report, and the election of officers for the ensuing year followed.

MILLICENT, September 1st.—Mr. W. Downs read an extract on Danish dairy cattle, and a good discussion followed.

MUNDALLA, September 8th.—The Hon. Secretary (Mr. A. C. de la Perrelle) read the report of the first annual meeting, which showed that ten meetings had been held during the year. The election of officers followed.

WOMEN WORKERS ON THE LAND.

To encourage the interest of women folk in the work on the land and its abundant possibilities, the Essex and Herts Women's Agricultural Committees, acting conjointly, have decided to hold a series of competitions, open to all England, for women trained in farm work. The competitions will be as follows:—(1) Milking; each girl to milk one cow. (2) Poultry killing, plucking, and tying up. (3) Hoeing roots. (4) Harnessing—i.e., putting a horse into harness and taking him out again. (5) Drive a harrow, one bout. (6) Manure, loading with cart and spreading. (7) Hedge trimming. (8) Driving competition (with light carts). Three prizes will be offered in each competition, and a silver cup will go to the girl securing the most wins.

CHAFF IN A HORSE'S EYE.

After having blown first powdered sugar and then bluestone into a horse's eye in a vain endeavor to secure the expulsion of a piece of chaff, a correspondent has written for advice. In replying, the Veterinary Lecturer (Mr. F. E. Place, B.V.Sc., M.R.C.V.S.) said—The

treatment and advice given you for your horse's eye should really be named "How not to treat an eye," as I will try and explain. At first when you noticed the bit of wheat chaff in the eye, if you could not get it out while he was standing with a twitch on his nose you should have cast him so as to be able to control him. A veterinary surgeon would have put in a solution of cocaine, and the thing would have been simple. When down, a feather dipped in castor oil or glycerine, preferably the latter, should have been worked across the eye against the hackles, and would most probably have succeeded in shifting the chaff; if not, a pair of forceps could have been improvised out of a hairpin, and it could have been taken out with this. Then a few drops of tr. calendula in a teaspoon of water might have been dropped in and the eye would have been all right, or if this was not to hand a little boric acid might have been dusted in. When, the next morning, after failure to get it out, you found the eyeball swollen round it, Nature had been doing her best to get rid of it and failed, and failure means inflammation, to which you added fuel when you adopted the old-fashioned remedy of blowing in powdered sugar, the only curative effect of which is to cause an increase of tears, which Nature herself had been doing in her attempts to wash the chaff off; but the sugar causes much pain, and, as you say, did no good, but assisted at the formation of the scum which you describe as over the eye. But the front of the eye—the cornea—is, as you know, quite transparent, and this scum is really inflammatory mud, as it were, unable to escape through the very minute vessels that run between the delicate layers of which the front of the eye is composed, so it becomes opaque; the blinds are down, but the trouble continues behind. Then, because somebody did not know—the source of most of the trouble in the world—they advised you to burn off the blind behind the window by destroying the glass with powdered bluestone, and you found the result of their ignorant advice when only the fragments of the window remained and the blind was in tatters, for behind it were many delicate organs; and when on the morning that you discovered the beetle-like thing on it, the cornea had been ulcerated right through, and the inner contents of the eye had escaped, pushing out a useful body known as the soot balls, or *corpora nigra*, whose duty is to absorb a glaring light and temper it to the eye. This, as you say, grew out for three-quarters of an inch or so and broke off, leaving a red spot on the centre of the eye. Nature had not given up the fight for recovery, and had succeeded so far that she had been able to mend the window with a board; she had substituted scar tissue for transparent cornea, with the result, as you say, that the horse is totally blind, and, as the repairing process is a painful one, the eye weeps more than it should, and you would like to relieve it. Get from the chemist 2oz. of a 5 per cent. solution of cocaine, and with a small glass syringe squirt in a teaspoonful twice a day; also mix 1oz. of tr. calendula with a pint of methylated spirit and a pint of water, tie a cloth over the eye loosely by attaching it to the forehead band and cheek strap of a halter and wet it well with the lotion three times a day. The pain will be lessened and healing hastened, but the sight will not be restored.

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APPLICATIONS FOR LAND.

Intending applicants for any lands which are open are reminded that application may be made for the whole or any portion of a block. The Land Board has power to allot portion of a block, if considered advisable, and to adjust the purchase-money or rent. If only portion of a block is applied for, deposit of a proportionate amount must be made, and the successful applicant would be required to pay cost of survey.

OFFICIAL LIST OF LANDS OPEN.

The attention of intending applicants for land is directed to the Official List of Lands Open, which may be seen at the principal Post Offices, and copies obtained at the Office of the Secretary for Lands. The List shows the Areas, Localities, Prices, &c., of the Sections available and the conditions under which they may be applied for.

NOTICE TO APPLICANTS FOR LAND.

The Land Board meets daily (when necessary) at the Board's Office, Department of Lands, to deal with applications received the previous day for any lands that may be open in the Official List. Applicants must either attend personally or send a full written statement. Forms can be obtained at Post Offices, or on application to the Secretary for Lands.

HARRY JACKSON,

Commissioner of Crown Lands and Immigration

iv.

JOURNAL OF AGRICULTURE OF S.A. [Oct., 1917.]

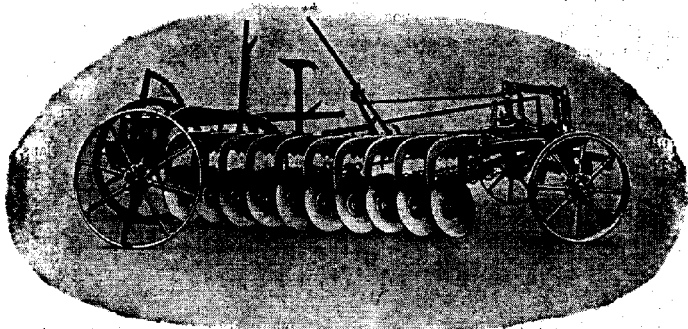
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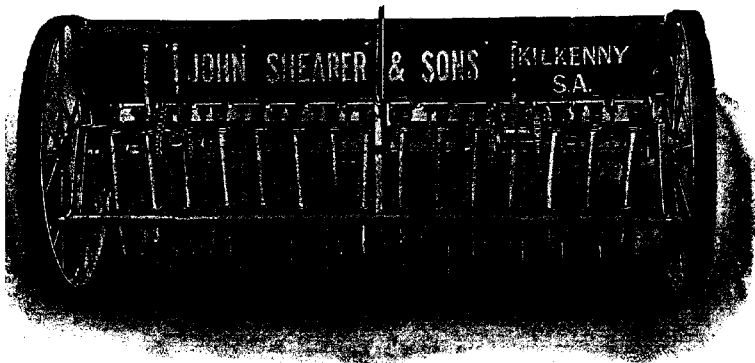
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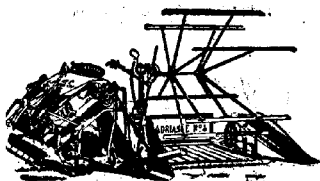
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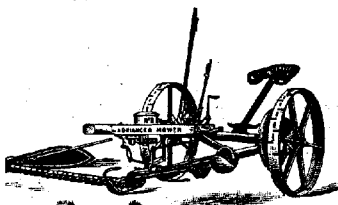
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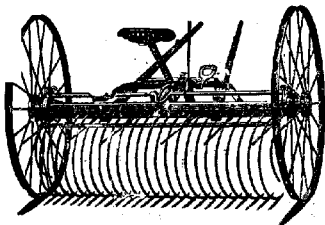
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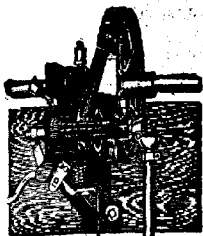
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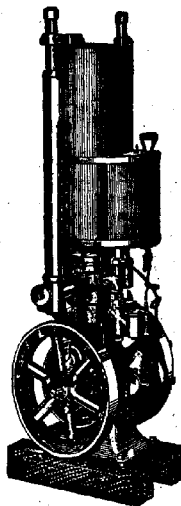
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